

SEQUENCE LISTING

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<120> DEVELOPMENT OF MUTATIONS USEFUL FOR
ATTENUATING DENGUE VIRUSES AND CHIMERIC DENGUE VIRUSES

<130> NIH214.001C1

<150> PCT/US02/16308

<151> 2002-05-22

<150> US 60/293049

<151> 2001-05-22

<160> 70

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 900

<212> PRT

<213> Dengue 4 virus

<400> 1

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Ile	Leu	Glu	Val	Asp	Arg	Thr	Glu	Ala	Lys	Ser	Ala	Leu	Lys	Asp
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Ser	Lys	Ile	Lys	His	Ala	Val	Ser	Arg	Gly	Ser	Ser	Lys	Ile	Arg
	50					55					60			Trp
Ile	Val	Glu	Arg	Gly	Met	Val	Lys	Pro	Lys	Gly	Lys	Val	Val	Asp
65					70					75				80
Gly	Cys	Gly	Arg	Gly	Gly	Trp	Ser	Tyr	Tyr	Met	Ala	Thr	Leu	Lys
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Val	Thr	Glu	Val	Lys	Gly	Tyr	Thr	Lys	Gly	Gly	Pro	Gly	His	Glu
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Pro	Ile	Pro	Met	Ala	Thr	Tyr	Gly	Trp	Asn	Leu	Val	Lys	Leu	His
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Gly	Val	Asp	Val	Phe	Tyr	Lys	Pro	Thr	Glu	Gln	Val	Asp	Thr	Leu
		130				135					140			Leu
Cys	Asp	Ile	Gly	Glu	Ser	Ser	Ser	Asn	Pro	Thr	Ile	Glu	Glu	Gly
145					150					155				Arg
Thr	Leu	Arg	Val	Leu	Lys	Met	Val	Glu	Pro	Trp	Leu	Ser	Ser	Lys
				165					170					Pro
Glu	Phe	Cys	Ile	Lys	Val	Leu	Asn	Pro	Tyr	Met	Pro	Thr	Val	Ile
			180					185					190	Glu
Glu	Leu	Glu	Lys	Leu	Gln	Arg	Lys	His	Gly	Gly	Asn	Leu	Val	Arg
			195				200					205		Cys
Pro	Leu	Ser	Arg	Asn	Ser	Thr	His	Glu	Met	Tyr	Trp	Val	Ser	Gly
		210				215					220			Ala
Ser	Gly	Asn	Ile	Val	Ser	Ser	Val	Asn	Thr	Thr	Ser	Lys	Met	Leu
225					230					235				Leu
Asn	Arg	Phe	Thr	Thr	Arg	His	Arg	Lys	Pro	Thr	Tyr	Glu	Lys	Asp
														Val

				245					250					255			
Asp	Leu	Gly	Ala	Gly	Thr	Arg	Ser	Val	Ser	Thr	Glu	Thr	Glu	Lys	Pro		
			260					265					270				
Asp	Met	Thr	Ile	Ile	Gly	Arg	Arg	Leu	Gln	Arg	Leu	Gln	Glu	Glu	His		
		275					280					285					
Lys	Glu	Thr	Trp	His	Tyr	Asp	Gln	Glu	Asn	Pro	Tyr	Arg	Thr	Trp	Ala		
	290					295					300						
Tyr	His	Gly	Ser	Tyr	Glu	Ala	Pro	Ser	Thr	Gly	Ser	Ala	Ser	Ser	Met		
305					310					315					320		
Val	Asn	Gly	Val	Val	Lys	Leu	Leu	Thr	Lys	Pro	Trp	Asp	Val	Ile	Pro		
			325						330					335			
Met	Val	Thr	Gln	Leu	Ala	Met	Thr	Asp	Thr	Thr	Pro	Phe	Gly	Gln	Gln		
			340					345					350				
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		355					360					365					
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	370					375					380						
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385					390					395					400		
Ser	Lys	Val	Arg	Ser	Asn	Ala	Ala	Ile	Gly	Ala	Val	Phe	Gln	Glu	Glu		
			405						410				415				
Gln	Gly	Trp	Thr	Ser	Ala	Ser	Glu	Ala	Val	Asn	Asp	Ser	Arg	Phe	Trp		
			420					425					430				
Glu	Leu	Val	Asp	Lys	Glu	Arg	Ala	Leu	His	Gln	Glu	Gly	Lys	Cys	Glu		
		435					440					445					
Ser	Cys	Val	Tyr	Asn	Met	Met	Gly	Lys	Arg	Glu	Lys	Lys	Leu	Gly	Glu		
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Phe	Gly	Arg	Ala	Lys	Gly	Ser	Arg	Ala	Ile	Trp	Tyr	Met	Trp	Leu	Gly		
465					470					475					480		
Ala	Arg	Phe	Leu	Glu	Phe	Glu	Ala	Leu	Gly	Phe	Leu	Asn	Glu	Asp	His		
			485						490				495				
Trp	Phe	Gly	Arg	Glu	Asn	Ser	Trp	Ser	Gly	Val	Glu	Gly	Glu	Gly	Leu		
			500					505					510				
His	Arg	Leu	Gly	Tyr	Ile	Leu	Glu	Glu	Ile	Asp	Lys	Lys	Asp	Gly	Asp		
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			580					585					590				
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	610					615					620						
Ala	Glu	Gly	Val	Ile	Thr	Gln	Asp	Asp	Met	Gln	Asn	Pro	Lys	Gly	Leu		
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			645						650				655				
Lys	Arg	Met	Ala	Ile	Ser	Gly	Asp	Asp	Cys	Val	Val	Lys	Pro	Leu	Asp		
			660					665					670				
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		675					680					685					
Arg	Lys	Asp	Ile	Pro	Gln	Trp	Glu	Pro	Ser	Lys	Gly	Trp	Lys	Asn	Trp		
	690					695					700						
Gln	Glu	Val	Pro	Phe	Cys	Ser	His	His	Phe	His	Lys	Ile	Phe	Met	Lys		
705					710					715					720		
Asp	Gly	Arg	Ser	Leu	Val	Val	Pro	Cys	Arg	Asn	Gln	Asp	Glu	Leu	Ile		
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Gly	Arg	Ala	Arg	Ile	Ser	Gln	Gly	Ala	Gly	Trp	Ser	Leu	Arg	Glu	Thr	
			740					745					750			
Ala	Cys	Leu	Gly	Lys	Ala	Tyr	Ala	Gln	Met	Trp	Ser	Leu	Met	Tyr	Phe	
		755					760					765				
His	Arg	Arg	Asp	Leu	Arg	Leu	Ala	Ser	Met	Ala	Ile	Cys	Ser	Ala	Val	
	770					775					780					
Pro	Thr	Glu	Trp	Phe	Pro	Thr	Ser	Arg	Thr	Thr	Trp	Ser	Ile	His	Ala	
785					790				795						800	
His	His	Gln	Trp	Met	Thr	Thr	Glu	Asp	Met	Leu	Lys	Val	Trp	Asn	Arg	
				805					810					815		
Val	Trp	Ile	Glu	Asp	Asn	Pro	Asn	Met	Thr	Asp	Lys	Thr	Pro	Val	His	
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Ser	Trp	Glu	Asp	Ile	Pro	Tyr	Leu	Gly	Lys	Arg	Glu	Asp	Leu	Trp	Cys	
		835					840					845				
Gly	Ser	Leu	Ile	Gly	Leu	Ser	Ser	Arg	Ala	Thr	Trp	Ala	Lys	Asn	Ile	
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His	Thr	Ala	Ile	Thr	Gln	Val	Arg	Asn	Leu	Ile	Gly	Lys	Glu	Glu	Tyr	
865					870				875						880	
Val	Asp	Tyr	Met	Pro	Val	Met	Lys	Arg	Tyr	Ser	Ala	Pro	Ser	Glu	Ser	
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Glu	Gly	Val	Leu													
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<210> 2
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 <212> DNA
 <213> Dengue 4 virus

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 acaaaaacag catattgacg ctgggaaaga ccagagatcc tgctgtctct gcaacatcaa 180
 tccaggcaca gagcgccgca agatggattg gtgttggtga tccaacaggt tct 233

<210> 3
 <211> 228
 <212> DNA
 <213> Dengue 1 virus

<400> 3
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 gggaagctgt accctggtgg taaggactag aggttagagg agaccccccg cacaacaaca 120
 aacagcatat tgacgctggg agagaccaga gatcctgctg tctctacagc atcattccag 180
 gcacagaacg ccaaaaaatg gaatggtgct gttgaatcaa caggttct 228

<210> 4
 <211> 230
 <212> DNA
 <213> Dengue 2 virus

<400> 4
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 aaaacagcat attgacgctg ggaaagacca gagatcctgc tgtctcctca gcatcattcc 180
 aggcacagaa cgccagaaaa tggaatggtg ctgttgaatc aacaggttct 230

<210> 5
 <211> 227
 <212> DNA
 <213> Dengue 3 virus

<400> 5
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aggggaagctg tacctccttg caaaggacta gaggttatag gagaccccc gcaaacaaaa 120
acagcatatt gacgctggga gagaccagag atcctgctgt ctcctcagca tcattccagg 180
cacagaacgc cagaaaaatgg aatggtgctg ttgaatcaac aggttct 227

<210> 6
<211> 227
<212> DNA
<213> West Nile virus

<400> 6
gactagaggt tagaggagac cccgcgtaaa aaagtgcacg gcccaacttg gctgaagctg 60
taagccaagg gaaggactag aggttagagg agaccccgtag ccaaaaacac caaaagaaac 120
agcatattga cacctgggat agactagggg atcttctgct ctgcacaacc agccacacgg 180
cacagtgcgc cgacataggt ggctggtggt gctagaacac aggatct 227

<210> 7
<211> 229
<212> DNA
<213> Japanese encephalitis virus

<400> 7
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ctgtagagga ggtggaagga ctagaggtta gaggagaccc cgcatttgca tcaaacagca 120
tattgacacc tgggaataga ctgggagatc ttctgctcta tctcaacatc agctactagg 180
cacagagcgc cgaagtatgt acgtggtggt gaggaagaac acaggatct 229

<210> 8
<211> 241
<212> DNA
<213> Yellow fever virus

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tagtgggacc atattgacgc cagggaaaga ccggagtggg tctctgcttt tcctccagag 180
gtctgtgagc acagtttgct caagaataag cagacctttg gatgacaaac aaaaaccac 240
t 241

<210> 9
<211> 249
<212> DNA
<213> Powassan virus

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ttttccgcct cctataactaa atttccccca ggaaactggg ggggcggttc ttgttctccc 180
tgagccacca ccatccaggc acagatagcc tgacaaggag atggtgtgtg actcggaaaa 240
acacccgct 249

<210> 10
<211> 250
<212> DNA
<213> Louping ill virus

<400> 10
tgcaagattt tgcgagaccc cccgccccat gacaaggccg aacatggagc attaaaggga 60
ggcccccgga agcatgcttc cgggaggagg gaagagagaa attggcagct ctcttcaggg 120

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tttttctccc tcctatacca aatttccccc tcgacagagg gggggcggtt cttgttctcc 180
ctgagccacc atcaccaga cacagatagt ctgacaagga ggtgatgtgt gactcgaaa 240
aacaccgct 250

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<210> 11
<211> 250
<212> DNA
<213> Tick-borne encephalitis virus

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<400> 11
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atttttcttc ctctataaca aaattccccc tcggtagagg gggggcggtt cttgttctcc 180
ctgagccacc atcaccaga cacaggtagt ctgacaagga ggtgatgtgt gactcgaaa 240
aacaccgct 250

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<210> 12
<211> 247
<212> DNA
<213> Langat virus

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<400> 12
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tttctctctc ctatacaaaa ttccccctcg tcagaggggg ggcggttctt gttctccctg 180
agccaccatc acctagacac agatagtctg aaaaggaggt gatgcgtgtc tcggaaaaac 240
accgct 247

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<210> 13
<211> 3387
<212> PRT
<213> Dengue 4 virus strain 2A

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35 40 45
Phe Ile Thr Phe Leu Arg Val Leu Ser Ile Pro Pro Thr Ala Gly Ile
50 55 60
Leu Lys Arg Trp Gly Gln Leu Lys Lys Asn Lys Ala Ile Lys Ile Leu
65 70 75 80
Ile Gly Phe Arg Lys Glu Ile Gly Arg Met Leu Asn Ile Leu Asn Gly
85 90 95
Arg Lys Arg Ser Thr Ile Thr Leu Leu Cys Leu Ile Pro Thr Val Met
100 105 110
Ala Phe Ser Leu Ser Thr Arg Asp Gly Glu Pro Leu Met Ile Val Ala
115 120 125
Lys His Glu Arg Gly Arg Pro Leu Leu Phe Lys Thr Thr Glu Gly Ile
130 135 140
Asn Lys Cys Thr Leu Ile Ala Met Asp Leu Gly Glu Met Cys Glu Asp
145 150 155 160
Thr Val Thr Tyr Lys Cys Pro Leu Leu Val Asn Thr Glu Pro Glu Asp
165 170 175
Ile Asp Cys Trp Cys Asn Leu Thr Ser Thr Trp Val Met Tyr Gly Thr
180 185 190
Cys Thr Gln Ser Gly Glu Arg Arg Arg Glu Lys Arg Ser Val Ala Leu
195 200 205
Thr Pro His Ser Gly Met Gly Leu Glu Thr Arg Ala Glu Thr Trp Met

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210	215	220
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225	230	235
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	245	250
Ile Gly Gln Thr Gly Ile Gln Arg Thr Val Phe Phe Val Leu Met Met		255
	260	265
Leu Val Ala Pro Ser Tyr Gly Met Arg Cys Val Gly Val Gly Asn Arg		270
	275	280
Asp Phe Val Glu Gly Val Ser Gly Gly Ala Trp Val Asp Leu Val Leu		285
	290	295
Glu His Gly Gly Cys Val Thr Thr Met Ala Gln Gly Lys Pro Thr Leu		300
305	310	315
Asp Phe Glu Leu Thr Lys Thr Thr Ala Lys Glu Val Ala Leu Leu Arg		320
	325	330
Thr Tyr Cys Ile Glu Ala Ser Ile Ser Asn Ile Thr Thr Ala Thr Arg		335
	340	345
Cys Pro Thr Gln Gly Glu Pro Tyr Leu Lys Glu Glu Gln Asp Gln Gln		350
	355	360
Tyr Ile Cys Arg Arg Asp Val Val Asp Arg Gly Trp Gly Asn Gly Cys		365
	370	375
Gly Leu Phe Gly Lys Gly Gly Val Val Thr Cys Ala Lys Phe Ser Cys		380
385	390	395
Ser Gly Lys Ile Thr Gly Asn Leu Val Gln Ile Glu Asn Leu Glu Tyr		400
	405	410
Thr Val Val Val Thr Val His Asn Gly Asp Thr His Ala Val Gly Asn		415
	420	425
Asp Thr Ser Asn His Gly Val Thr Ala Met Ile Thr Pro Arg Ser Pro		430
	435	440
Ser Val Glu Val Lys Leu Pro Asp Tyr Gly Glu Leu Thr Leu Asp Cys		445
	450	455
Glu Pro Arg Ser Gly Ile Asp Phe Asn Glu Met Ile Leu Met Lys Met		460
465	470	475
Lys Lys Lys Thr Trp Leu Val His Lys Gln Trp Phe Leu Asp Leu Pro		480
	485	490
Leu Pro Trp Thr Ala Gly Ala Asp Thr Ser Glu Val His Trp Asn Tyr		495
	500	505
Lys Glu Arg Met Val Thr Phe Lys Val Pro His Ala Lys Arg Gln Asp		510
	515	520
Val Thr Val Leu Gly Ser Gln Glu Gly Ala Met His Ser Ala Leu Ala		525
	530	535
Gly Ala Thr Glu Val Asp Ser Gly Asp Gly Asn His Met Phe Ala Gly		540
545	550	555
His Leu Lys Cys Lys Val Arg Met Glu Lys Leu Arg Ile Lys Gly Met		560
	565	570
Ser Tyr Thr Met Cys Ser Gly Lys Phe Ser Ile Asp Lys Glu Met Ala		575
	580	585
Glu Thr Gln His Gly Thr Thr Val Val Lys Val Lys Tyr Glu Gly Ala		590
	595	600
Gly Ala Pro Cys Lys Val Pro Ile Glu Ile Arg Asp Val Asn Lys Glu		605
	610	615
Lys Val Val Gly Arg Ile Ile Ser Ser Thr Pro Leu Ala Glu Asn Thr		620
625	630	635
Asn Ser Val Thr Asn Ile Glu Leu Glu Pro Pro Phe Gly Asp Ser Tyr		640
	645	650
Ile Val Ile Gly Val Gly Asn Ser Ala Leu Thr Leu His Trp Phe Arg		655
	660	665
Lys Gly Ser Ser Ile Gly Lys Met Phe Glu Ser Thr Tyr Arg Gly Ala		670
	675	680
Lys Arg Met Ala Ile Leu Gly Glu Thr Ala Trp Asp Phe Gly Ser Val		685
	690	695
		700

Gly 705	Gly	Leu	Phe	Thr	Ser 710	Leu	Gly	Lys	Ala	Val 715	His	Gln	Val	Phe	Gly 720
Ser	Val	Tyr	Thr	Thr 725	Met	Phe	Gly	Gly	Val 730	Ser	Trp	Met	Ile	Arg	Ile 735
Leu	Ile	Gly	Phe 740	Leu	Val	Leu	Trp	Ile 745	Gly	Thr	Asn	Ser	Arg	Asn	Thr 750
Ser	Met	Ala 755	Met	Thr	Cys	Ile	Ala 760	Val	Gly	Gly	Ile	Thr	Leu	Phe	Leu 765
Gly 770	Phe	Thr	Val	Gln	Ala	Asp 775	Met	Gly	Cys	Val	Val	Ser	Trp	Ser	Gly 780
Lys 785	Glu	Leu	Lys	Cys	Gly 790	Ser	Gly	Ile	Phe	Val	Val	Asp	Asn	Val	His 800
Thr	Trp	Thr	Glu	Gln 805	Tyr	Lys	Phe	Gln	Pro 810	Glu	Ser	Pro	Ala	Arg	Leu 815
Ala	Ser	Ala	Ile 820	Leu	Asn	Ala	His	Lys 825	Asp	Gly	Val	Cys	Gly	Ile	Arg 830
Ser	Thr	Thr	Arg 835	Leu	Glu	Asn	Val 840	Met	Trp	Lys	Gln	Ile	Thr	Asn	Glu 845
Leu	Asn	Tyr	Val	Leu	Trp	Glu 850	Gly	Gly	His	Asp	Leu	Thr	Val	Val	Ala 855
Gly 865	Asp	Val	Lys	Gly	Val 870	Leu	Thr	Lys	Gly	Lys	Arg	Ala	Leu	Thr	Pro 875
Pro	Val	Ser	Asp	Leu 885	Lys	Tyr	Ser	Trp	Lys 890	Thr	Trp	Gly	Lys	Ala	Lys 895
Ile	Phe	Thr	Pro 900	Glu	Ala	Arg	Asn	Ser 905	Thr	Phe	Leu	Ile	Asp	Gly	Pro 910
Asp	Thr	Ser 915	Glu	Cys	Pro	Asn	Glu 920	Arg	Arg	Ala	Trp	Asn	Ser	Leu	Glu 925
Val	Glu	Asp 930	Tyr	Gly	Phe	Gly 935	Met	Phe	Thr	Thr	Asn	Ile	Trp	Met	Lys 940
Phe 945	Arg	Glu	Gly	Ser	Ser 950	Glu	Val	Cys	Asp	His 955	Arg	Leu	Met	Ser	Ala 960
Ala	Ile	Lys	Asp	Gln 965	Lys	Ala	Val	His	Ala 970	Asp	Met	Gly	Tyr	Trp	Ile 975
Glu	Ser	Ser	Lys 980	Asn	Gln	Thr	Trp	Gln 985	Ile	Glu	Lys	Ala	Ser	Leu	Ile 990
Glu	Val	Lys 995	Thr	Cys	Leu	Trp	Pro 1000	Lys	Thr	His	Thr	Leu	Trp	Ser	Asn 1005
Gly	Val	Leu 1010	Glu	Ser	Gln	Met 1015	Leu	Ile	Pro	Lys	Ser	Tyr	Ala	Gly	Pro 1020
Phe 1025	Ser	Gln	His	Asn	Tyr 1030	Arg	Gln	Gly	Tyr	Ala 1035	Thr	Gln	Thr	Val	Gly 1040
Pro	Trp	His	Leu	Gly 1045	Lys	Leu	Glu	Ile	Asp	Phe 1050	Gly	Glu	Cys	Pro	Gly 1055
Thr	Thr	Val	Thr 1060	Ile	Gln	Glu	Asp	Cys 1065	Asp	His	Arg	Gly	Pro	Ser	Leu 1070
Arg	Thr	Thr 1075	Ala	Ser	Gly	Lys 1080	Leu	Val	Thr	Gln	Trp	Cys	Cys	Arg	
Ser	Cys	Thr	Met	Pro	Pro	Leu 1095	Arg	Phe	Leu	Gly 1100	Glu	Asp	Gly	Cys	Trp 1105
Tyr 1105	Gly	Met	Glu	Ile	Arg 1110	Pro	Leu	Ser	Glu	Lys 1115	Glu	Glu	Asn	Met	Val 1120
Lys	Ser	Gln	Val	Thr 1125	Ala	Gly	Gln	Gly	Thr	Ser 1130	Glu	Thr	Phe	Ser	Met 1135
Gly	Leu	Leu	Cys 1140	Leu	Thr	Leu	Phe	Val 1145	Glu	Glu	Cys	Leu	Arg	Arg	Arg 1150
Val	Thr	Arg	Lys 1155	His	Met	Ile	Leu 1160	Val	Val	Val	Ile	Thr	Leu	Cys	Ala 1165
Ile	Ile	Leu	Gly	Gly	Leu	Thr 1175	Trp	Met	Asp	Leu 1180	Leu	Arg	Ala	Leu	Ile 1185
Met	Leu	Gly	Asp	Thr	Met	Ser	Gly	Arg	Ile	Gly	Gly	Gln	Ile	His	Leu 1190

1185		1190		1195		1200
Ala Ile Met Ala Val Phe Lys Met Ser Pro Gly Tyr Val Leu Gly Val						
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Phe Leu Arg Lys Leu Thr Ser Arg Glu Thr Ala Leu Met Val Ile Gly						
	1220		1225		1230	
Met Ala Met Thr Thr Val Leu Ser Ile Pro His Asp Leu Met Glu Leu						
	1235		1240		1245	
Ile Asp Gly Ile Ser Leu Gly Leu Ile Leu Leu Lys Ile Val Thr Gln						
	1250		1255		1260	
Phe Asp Asn Thr Gln Val Gly Thr Leu Ala Leu Ser Leu Thr Phe Ile						
	1265		1270		1275	1280
Arg Ser Thr Met Pro Leu Val Met Ala Trp Arg Thr Ile Met Ala Val						
	1285		1290		1295	
Leu Phe Val Val Thr Leu Ile Pro Leu Cys Arg Thr Ser Cys Leu Gln						
	1300		1305		1310	
Lys Gln Ser His Trp Val Glu Ile Thr Ala Leu Ile Leu Gly Ala Gln						
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Ala Asp Leu Ser Leu Glu Lys Ala Ala Asn Val Gln Trp Asp Glu Met						
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Ala Asp Ile Thr Gly Ser Ser Pro Ile Ile Glu Val Lys Gln Asp Glu						
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Asp Gly Ser Phe Ser Ile Arg Asp Val Glu Glu Thr Asn Met Ile Thr						
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Lys Ala Ala Leu Ser Glu Gly Val Tyr Arg Ile Met Gln Arg Gly Leu						
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Tyr Gly Gly Gly Trp Arg Leu Gly Asp Lys Trp Asp Lys Glu Glu Asp						
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Thr Leu Asp Phe Lys Pro Gly Thr Ser Gly Ser Pro Ile Ile Asn Arg						
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Lys Gly Lys Val Ile Gly Leu Tyr Gly Asn Gly Val Val Thr Lys Ser						
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Gly Asp Tyr Val Ser Ala Ile Thr Gln Ala Glu Arg Ile Gly Glu Pro						
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 1955 1960 1965
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 Glu Cys Gly Val Asp Arg Leu Lys Arg Met Ala Ile Ser Gly Asp Asp

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      35          40          45
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      50          55          60
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      65          70          75          80
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      85          90          95
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<212> DNA

<213> Recombinant dengue virus rDEN2/4d30

<400> 18

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<211> 3387

<212> PRT

<213> Dengue 4 virus

<400> 19

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Gln	Arg	Ser	Gly	Ala	Leu	Trp	Asp	Val	Pro	Ser	Pro	Ala	Ala	Thr Lys
			1475				1480							1485
Lys	Ala	Ala	Leu	Ser	Glu	Gly	Val	Tyr	Arg	Ile	Met	Gln	Arg	Gly Leu
	1490					1495					1500			
Phe	Gly	Lys	Thr	Gln	Val	Gly	Val	Gly	Ile	His	Met	Glu	Gly	Val Phe
1505					1510					1515				1520

His	Thr	Met	Trp	His	Val	Thr	Arg	Gly	Ser	Val	Ile	Cys	His	Glu	Thr	1525	1530	1535
Gly	Arg	Leu	Glu	Pro	Ser	Trp	Ala	Asp	Val	Arg	Asn	Asp	Met	Ile	Ser	1540	1545	1550
Tyr	Gly	Gly	Gly	Trp	Arg	Leu	Gly	Asp	Lys	Trp	Asp	Lys	Glu	Glu	Asp	1555	1560	1565
Val	Gln	Val	Leu	Ala	Ile	Glu	Pro	Gly	Lys	Asn	Pro	Lys	His	Val	Gln	1570	1575	1580
Thr	Lys	Pro	Gly	Leu	Phe	Lys	Thr	Leu	Thr	Gly	Glu	Ile	Gly	Ala	Val	1585	1590	1595
Thr	Leu	Asp	Phe	Lys	Pro	Gly	Thr	Ser	Gly	Ser	Pro	Ile	Ile	Asn	Arg	1605	1610	1615
Lys	Gly	Lys	Val	Ile	Gly	Leu	Tyr	Gly	Asn	Gly	Val	Val	Thr	Lys	Ser	1620	1625	1630
Gly	Asp	Tyr	Val	Ser	Ala	Ile	Thr	Gln	Ala	Glu	Arg	Ile	Gly	Glu	Pro	1635	1640	1645
Asp	Tyr	Glu	Val	Asp	Glu	Asp	Ile	Phe	Arg	Lys	Lys	Arg	Leu	Thr	Ile	1650	1655	1660
Met	Asp	Leu	His	Pro	Gly	Ala	Gly	Lys	Thr	Lys	Arg	Ile	Leu	Pro	Ser	1665	1670	1675
Ile	Val	Arg	Glu	Ala	Leu	Lys	Arg	Arg	Leu	Arg	Thr	Leu	Ile	Leu	Ala	1685	1690	1695
Pro	Thr	Arg	Val	Val	Ala	Ala	Glu	Met	Glu	Glu	Ala	Leu	Arg	Gly	Leu	1700	1705	1710
Pro	Ile	Arg	Tyr	Gln	Thr	Pro	Ala	Val	Lys	Ser	Glu	His	Thr	Gly	Arg	1715	1720	1725
Glu	Ile	Val	Asp	Leu	Met	Cys	His	Ala	Thr	Phe	Thr	Thr	Arg	Leu	Leu	1730	1735	1740
Ser	Ser	Thr	Arg	Val	Pro	Asn	Tyr	Asn	Leu	Ile	Val	Met	Asp	Glu	Ala	1745	1750	1755
His	Phe	Thr	Asp	Pro	Ser	Ser	Val	Ala	Ala	Arg	Gly	Tyr	Ile	Ser	Thr	1765	1770	1775
Arg	Val	Glu	Met	Gly	Glu	Ala	Ala	Ala	Ile	Phe	Met	Thr	Ala	Thr	Pro	1780	1785	1790
Pro	Gly	Ala	Thr	Asp	Pro	Phe	Pro	Gln	Ser	Asn	Ser	Pro	Ile	Glu	Asp	1795	1800	1805
Ile	Glu	Arg	Glu	Ile	Pro	Glu	Arg	Ser	Trp	Asn	Thr	Gly	Phe	Asp	Trp	1810	1815	1820
Ile	Thr	Asp	Tyr	Gln	Gly	Lys	Thr	Val	Trp	Phe	Val	Pro	Ser	Ile	Lys	1825	1830	1835
Ala	Gly	Asn	Asp	Ile	Ala	Asn	Cys	Leu	Arg	Lys	Ser	Gly	Lys	Lys	Val	1845	1850	1855
Ile	Gln	Leu	Ser	Arg	Lys	Thr	Phe	Asp	Thr	Glu	Tyr	Pro	Lys	Thr	Lys	1860	1865	1870
Leu	Thr	Asp	Trp	Asp	Phe	Val	Val	Thr	Thr	Asp	Ile	Ser	Glu	Met	Gly	1875	1880	1885
Ala	Asn	Phe	Arg	Ala	Gly	Arg	Val	Ile	Asp	Pro	Arg	Arg	Cys	Leu	Lys	1890	1895	1900
Pro	Val	Ile	Leu	Pro	Asp	Gly	Pro	Glu	Arg	Val	Ile	Leu	Ala	Gly	Pro	1905	1910	1915
Ile	Pro	Val	Thr	Pro	Ala	Ser	Ala	Ala	Gln	Arg	Arg	Gly	Arg	Ile	Gly	1925	1930	1935
Arg	Asn	Pro	Ala	Gln	Glu	Asp	Asp	Gln	Tyr	Val	Phe	Ser	Gly	Asp	Pro	1940	1945	1950
Leu	Lys	Asn	Asp	Glu	Asp	His	Ala	His	Trp	Thr	Glu	Ala	Lys	Met	Leu	1955	1960	1965
Leu	Asp	Asn	Ile	Tyr	Thr	Pro	Glu	Gly	Ile	Ile	Pro	Thr	Leu	Phe	Gly	1970	1975	1980
Pro	Glu	Arg	Glu	Lys	Thr	Gln	Ala	Ile	Asp	Gly	Glu	Phe	Arg	Leu	Arg	1985	1990	1995
Gly	Glu	Gln	Arg	Lys	Thr	Phe	Val	Glu	Leu	Met	Arg	Arg	Gly	Asp	Leu	2000		

2005					2010					2015					
Pro	Val	Trp	Leu	Ser	Tyr	Lys	Val	Ala	Ser	Ala	Gly	Ile	Ser	Tyr	Lys
2020					2025					2030					
Asp	Arg	Glu	Trp	Cys	Phe	Thr	Gly	Glu	Arg	Asn	Asn	Gln	Ile	Leu	Glu
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2065					2070					2075					
Leu	Lys	Asp	Phe	Lys	Glu	Phe	Ala	Ser	Gly	Arg	Lys	Ser	Ile	Thr	Leu
2085					2090					2095					
Asp	Ile	Leu	Thr	Glu	Ile	Ala	Ser	Leu	Pro	Thr	Tyr	Leu	Ser	Ser	Arg
2100					2105					2110					
Ala	Lys	Leu	Ala	Leu	Asp	Asn	Ile	Val	Met	Leu	His	Thr	Thr	Glu	Arg
2115					2120					2125					
Gly	Gly	Arg	Ala	Tyr	Gln	His	Ala	Leu	Asn	Glu	Leu	Pro	Glu	Ser	Leu
2130					2135					2140					
Glu	Thr	Leu	Met	Leu	Val	Ala	Leu	Leu	Gly	Ala	Met	Thr	Ala	Gly	Ile
2145					2150					2155					
Phe	Leu	Phe	Phe	Met	Gln	Gly	Lys	Gly	Ile	Gly	Lys	Leu	Ser	Met	Gly
2165					2170					2175					
Leu	Ile	Thr	Ile	Ala	Val	Ala	Ser	Gly	Leu	Leu	Trp	Val	Ala	Glu	Ile
2180					2185					2190					
Gln	Pro	Gln	Trp	Ile	Ala	Ala	Ser	Ile	Ile	Leu	Glu	Phe	Phe	Leu	Met
2195					2200					2205					
Val	Leu	Leu	Ile	Pro	Glu	Pro	Glu	Lys	Gln	Arg	Thr	Pro	Gln	Asp	Asn
2210					2215					2220					
Gln	Leu	Ile	Tyr	Val	Ile	Leu	Thr	Ile	Leu	Thr	Ile	Ile	Gly	Leu	Ile
2225					2230					2235					
Ala	Ala	Asn	Glu	Met	Gly	Leu	Ile	Glu	Lys	Thr	Lys	Thr	Asp	Phe	Gly
2245					2250					2255					
Phe	Tyr	Gln	Val	Lys	Thr	Glu	Thr	Thr	Ile	Leu	Asp	Val	Asp	Leu	Arg
2260					2265					2270					
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Pro	Met	Leu	Arg	His	Thr	Ile	Glu	Asn	Thr	Ser	Ala	Asn	Leu	Ser	Leu
2290					2295					2300					
Ala	Ala	Ile	Ala	Asn	Gln	Ala	Ala	Val	Leu	Met	Gly	Leu	Gly	Lys	Gly
2305					2310					2315					
Trp	Pro	Leu	His	Arg	Met	Asp	Leu	Gly	Val	Pro	Leu	Leu	Ala	Met	Gly
2325					2330					2335					
Cys	Tyr	Ser	Gln	Val	Asn	Pro	Thr	Thr	Leu	Thr	Ala	Ser	Leu	Val	Met
2340					2345					2350					
Leu	Leu	Val	His	Tyr	Ala	Ile	Ile	Gly	Pro	Gly	Leu	Gln	Ala	Lys	Ala
2355					2360					2365					
Thr	Arg	Glu	Ala	Gln	Lys	Arg	Thr	Ala	Ala	Gly	Ile	Met	Lys	Asn	Pro
2370					2375					2380					
Thr	Val	Asp	Gly	Ile	Thr	Val	Ile	Asp	Leu	Glu	Pro	Ile	Ser	Tyr	Asp
2385					2390					2395					
Pro	Lys	Phe	Glu	Lys	Gln	Leu	Gly	Gln	Val	Met	Leu	Leu	Val	Leu	Cys
2405					2410					2415					
Ala	Gly	Gln	Leu	Leu	Leu	Met	Arg	Thr	Thr	Trp	Ala	Phe	Cys	Glu	Val
2420					2425					2430					
Leu	Thr	Leu	Ala	Thr	Gly	Pro	Ile	Leu	Thr	Leu	Trp	Glu	Gly	Asn	Pro
2435					2440					2445					
Gly	Arg	Phe	Trp	Asn	Thr	Thr	Ile	Ala	Val	Ser	Thr	Ala	Asn	Ile	Phe
2450					2455					2460					
Arg	Gly	Ser	Tyr	Leu	Ala	Gly	Ala	Gly	Leu	Ala	Phe	Ser	Leu	Ile	Lys
2465					2470					2475					
Asn	Ala	Gln	Thr	Pro	Arg	Arg	Gly	Thr	Gly	Thr	Thr	Gly	Glu	Thr	Leu
2485					2490					2495					

Gly	Glu	Lys	Trp	Lys	Arg	Gln	Leu	Asn	Ser	Leu	Asp	Arg	Lys	Glu	Phe	2500	2505	2510
Glu	Glu	Tyr	Lys	Arg	Ser	Gly	Ile	Leu	Glu	Val	Asp	Arg	Thr	Glu	Ala	2515	2520	2525
Lys	Ser	Ala	Leu	Lys	Asp	Gly	Ser	Lys	Ile	Lys	His	Ala	Val	Ser	Arg	2530	2535	2540
Gly	Ser	Ser	Lys	Ile	Arg	Trp	Ile	Val	Glu	Arg	Gly	Met	Val	Lys	Pro	2545	2550	2555
Lys	Gly	Lys	Val	Val	Asp	Leu	Gly	Cys	Gly	Arg	Gly	Gly	Trp	Ser	Tyr	2565	2570	2575
Tyr	Met	Ala	Thr	Leu	Lys	Asn	Val	Thr	Glu	Val	Lys	Gly	Tyr	Thr	Lys	2580	2585	2590
Gly	Gly	Pro	Gly	His	Glu	Glu	Pro	Ile	Pro	Met	Ala	Thr	Tyr	Gly	Trp	2595	2600	2605
Asn	Leu	Val	Lys	Leu	His	Ser	Gly	Val	Asp	Val	Phe	Tyr	Lys	Pro	Thr	2610	2615	2620
Glu	Gln	Val	Asp	Thr	Leu	Leu	Cys	Asp	Ile	Gly	Glu	Ser	Ser	Ser	Asn	2625	2630	2635
Pro	Thr	Ile	Glu	Glu	Gly	Arg	Thr	Leu	Arg	Val	Leu	Lys	Met	Val	Glu	2645	2650	2655
Pro	Trp	Leu	Ser	Lys	Pro	Glu	Phe	Cys	Ile	Lys	Val	Leu	Asn	Pro		2660	2665	2670
Tyr	Met	Pro	Thr	Val	Ile	Glu	Glu	Leu	Glu	Lys	Leu	Gln	Arg	Lys	His	2675	2680	2685
Gly	Gly	Asn	Leu	Val	Arg	Cys	Pro	Leu	Ser	Arg	Asn	Ser	Thr	His	Glu	2690	2695	2700
Met	Tyr	Trp	Val	Ser	Gly	Ala	Ser	Gly	Asn	Ile	Val	Ser	Ser	Val	Asn	2705	2710	2715
Thr	Thr	Ser	Lys	Met	Leu	Leu	Asn	Arg	Phe	Thr	Thr	Arg	His	Arg	Lys	2725	2730	2735
Pro	Thr	Tyr	Glu	Lys	Asp	Val	Asp	Leu	Gly	Ala	Gly	Thr	Arg	Ser	Val	2740	2745	2750
Ser	Thr	Glu	Thr	Glu	Lys	Pro	Asp	Met	Thr	Ile	Ile	Gly	Arg	Arg	Leu	2755	2760	2765
Gln	Arg	Leu	Gln	Glu	Glu	His	Lys	Glu	Thr	Trp	His	Tyr	Asp	Gln	Glu	2770	2775	2780
Asn	Pro	Tyr	Arg	Thr	Trp	Ala	Tyr	His	Gly	Ser	Tyr	Glu	Ala	Pro	Ser	2785	2790	2795
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Lys	Pro	Trp	Asp	Val	Ile	Pro	Met	Val	Thr	Gln	Leu	Ala	Met	Thr	Asp	2820	2825	2830
Thr	Thr	Pro	Phe	Gly	Gln	Gln	Arg	Val	Phe	Lys	Glu	Lys	Val	Asp	Thr	2835	2840	2845
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Ala	Asn	Trp	Leu	Trp	Ala	Leu	Leu	Gly	Lys	Lys	Lys	Asn	Pro	Arg	Leu	2865	2870	2875
Cys	Thr	Arg	Glu	Glu	Phe	Ile	Ser	Lys	Val	Arg	Ser	Asn	Ala	Ala	Ile	2885	2890	2895
Gly	Ala	Val	Phe	Gln	Glu	Glu	Gln	Gly	Trp	Thr	Ser	Ala	Ser	Glu	Ala	2900	2905	2910
Val	Asn	Asp	Ser	Arg	Phe	Trp	Glu	Leu	Val	Asp	Lys	Glu	Arg	Ala	Leu	2915	2920	2925
His	Gln	Glu	Gly	Lys	Cys	Glu	Ser	Cys	Val	Tyr	Asn	Met	Met	Gly	Lys	2930	2935	2940
Arg	Glu	Lys	Lys	Leu	Gly	Glu	Phe	Gly	Arg	Ala	Lys	Gly	Ser	Arg	Ala	2945	2950	2955
Ile	Trp	Tyr	Met	Trp	Leu	Gly	Ala	Arg	Phe	Leu	Glu	Phe	Glu	Ala	Leu	2965	2970	2975
Gly	Phe	Leu	Asn	Glu	Asp	His	Trp	Phe	Gly	Arg	Glu	Asn	Ser	Trp	Ser			

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Gly	Val	Glu	Gly	Glu	Gly	Leu	His	Arg	Leu	Gly	Tyr	Ile	Leu	Glu	Glu
2995					3000					3005					
Ile	Asp	Lys	Lys	Asp	Gly	Asp	Leu	Met	Tyr	Ala	Asp	Asp	Thr	Ala	Gly
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Trp	Asp	Thr	Arg	Ile	Thr	Glu	Asp	Asp	Leu	Gln	Asn	Glu	Glu	Leu	Ile
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Lys	Leu	Thr	Tyr	Gln	Asn	Lys	Val	Val	Lys	Val	Leu	Arg	Pro	Thr	Pro
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Arg	Gly	Ala	Val	Met	Asp	Ile	Ile	Ser	Arg	Lys	Asp	Gln	Arg	Gly	Ser
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Glu	Cys	Gly	Val	Asp	Arg	Leu	Lys	Arg	Met	Ala	Ile	Ser	Gly	Asp	Asp
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Cys	Val	Val	Lys	Pro	Leu	Asp	Glu	Arg	Phe	Gly	Thr	Ser	Leu	Leu	Phe
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Ser	Lys	Gly	Trp	Lys	Asn	Trp	Gln	Glu	Val	Pro	Phe	Cys	Ser	His	His
3185					3190					3195					
Phe	His	Lys	Ile	Phe	Met	Lys	Asp	Gly	Arg	Ser	Leu	Val	Val	Pro	Cys
3205					3210					3215					
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3220					3225					3230					
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3235					3240					3245					
Met	Trp	Ser	Leu	Met	Tyr	Phe	His	Arg	Arg	Asp	Leu	Arg	Leu	Ala	Ser
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3285					3290					3295					
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3300					3305					3310					
Thr	Asp	Lys	Thr	Pro	Val	His	Ser	Trp	Glu	Asp	Ile	Pro	Tyr	Leu	Gly
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Lys	Arg	Glu	Asp	Leu	Trp	Cys	Gly	Ser	Leu	Ile	Gly	Leu	Ser	Ser	Arg
3330					3335					3340					
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<210> 20

<211> 3392

<212> PRT

<213> Dengue 1 virus strain WP

<400> 20

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			20					25					30		
Phe	Ser	Lys	Gly	Leu	Leu	Ser	Gly	Gln	Gly	Pro	Met	Lys	Leu	Val	Met
		35					40					45			
Ala	Phe	Ile	Ala	Phe	Leu	Arg	Phe	Leu	Ala	Ile	Pro	Pro	Thr	Ala	Gly
		50				55					60				
Ile	Leu	Ala	Arg	Trp	Gly	Ser	Phe	Lys	Lys	Asn	Gly	Ala	Ile	Lys	Val
65					70					75				80	
Leu	Arg	Gly	Phe	Lys	Lys	Glu	Ile	Ser	Asn	Met	Leu	Asn	Ile	Met	Asn
				85					90					95	
Arg	Arg	Lys	Arg	Ser	Val	Thr	Met	Leu	Leu	Met	Leu	Leu	Pro	Thr	Ala
			100					105					110		
Leu	Ala	Phe	His	Leu	Thr	Thr	Arg	Gly	Gly	Glu	Pro	His	Met	Ile	Val
		115					120					125			
Ser	Lys	Gln	Glu	Arg	Gly	Lys	Ser	Leu	Leu	Phe	Lys	Thr	Ser	Ala	Gly
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Val	Asn	Met	Cys	Thr	Leu	Ile	Ala	Met	Asp	Leu	Gly	Glu	Leu	Cys	Glu
145					150				155						160
Asp	Thr	Met	Thr	Tyr	Lys	Cys	Pro	Arg	Ile	Thr	Glu	Thr	Glu	Pro	Asp
				165					170					175	
Asp	Val	Asp	Cys	Trp	Cys	Asn	Ala	Thr	Glu	Thr	Trp	Val	Thr	Tyr	Gly
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Thr	Cys	Ser	Gln	Thr	Gly	Glu	His	Arg	Arg	Asp	Lys	Arg	Ser	Val	Ala
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Leu	Ala	Pro	His	Val	Gly	Leu	Gly	Leu	Glu	Thr	Arg	Thr	Glu	Thr	Trp
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Met	Ser	Ser	Glu	Gly	Ala	Trp	Lys	Gln	Ile	Gln	Lys	Val	Glu	Thr	Trp
225					230					235					240
Ala	Leu	Arg	His	Pro	Gly	Phe	Thr	Val	Ile	Ala	Leu	Phe	Leu	Ala	His
				245					250					255	
Ala	Ile	Gly	Thr	Ser	Ile	Thr	Gln	Lys	Gly	Ile	Ile	Phe	Ile	Leu	Leu
			260					265					270		
Met	Leu	Val	Thr	Pro	Ser	Met	Ala	Met	Arg	Cys	Val	Gly	Ile	Gly	Asn
		275					280					285			
Arg	Asp	Phe	Val	Glu	Gly	Leu	Ser	Gly	Ala	Thr	Trp	Val	Asp	Val	Val
		290				295					300				
Leu	Glu	His	Gly	Ser	Cys	Val	Thr	Thr	Met	Ala	Lys	Asp	Lys	Pro	Thr
305					310					315					320
Leu	Asp	Ile	Glu	Leu	Leu	Lys	Thr	Glu	Val	Thr	Asn	Pro	Ala	Val	Leu
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Arg	Lys	Leu	Cys	Ile	Glu	Ala	Lys	Ile	Ser	Asn	Thr	Thr	Thr	Asp	Ser
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Asn	Phe	Val	Cys	Arg	Arg	Thr	Phe	Val	Asp	Arg	Gly	Trp	Gly	Asn	Gly
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Cys	Gly	Leu	Phe	Gly	Lys	Gly	Ser	Leu	Ile	Thr	Cys	Ala	Lys	Phe	Lys
385					390					395					400
Cys	Val	Thr	Lys	Leu	Glu	Gly	Lys	Ile	Val	Gln	Tyr	Glu	Asn	Leu	Lys
				405					410					415	
Tyr	Ser	Val	Ile	Val	Thr	Val	His	Thr	Gly	Asp	Gln	His	Gln	Val	Gly
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Asn	Glu	Thr	Thr	Glu	His	Gly	Thr	Thr	Ala	Thr	Ile	Thr	Pro	Gln	Ala
		435					440					445			
Pro	Thr	Ser	Glu	Ile	Gln	Leu	Thr	Asp	Tyr	Gly	Ala	Leu	Thr	Leu	Asp
		450				455					460				
Cys	Ser	Pro	Arg	Thr	Gly	Leu	Asp	Phe	Asn	Glu	Met	Val	Leu	Leu	Thr
465					470					475					480
Met	Glu	Lys	Lys	Ser	Trp	Leu	Val	His	Lys	Gln	Trp	Phe	Leu	Asp	Leu
				485					490					495	
Pro	Leu	Pro	Trp	Thr	Ser	Gly	Ala	Ser	Thr	Ser	Gln	Glu	Thr	Trp	Asn

			500					505					510			
Arg	Gln	Asp	Leu	Leu	Val	Thr	Phe	Lys	Thr	Ala	His	Ala	Lys	Lys	Gln	
		515					520					525				
Glu	Val	Val	Val	Leu	Gly	Ser	Gln	Glu	Gly	Ala	Met	His	Thr	Ala	Leu	
		530					535					540				
Thr	Gly	Ala	Thr	Glu	Ile	Gln	Thr	Ser	Gly	Thr	Thr	Thr	Ile	Phe	Ala	
545					550					555					560	
Gly	His	Leu	Lys	Cys	Arg	Leu	Lys	Met	Asp	Lys	Leu	Thr	Leu	Lys	Gly	
				565					570					575		
Met	Ser	Tyr	Val	Met	Cys	Thr	Gly	Ser	Phe	Lys	Leu	Glu	Lys	Glu	Val	
			580					585					590			
Ala	Glu	Thr	Gln	His	Gly	Thr	Val	Leu	Val	Gln	Val	Lys	Tyr	Glu	Gly	
		595					600					605				
Thr	Asp	Ala	Pro	Cys	Lys	Ile	Pro	Phe	Ser	Ser	Gln	Asp	Glu	Lys	Gly	
	610					615					620					
Val	Thr	Gln	Asn	Gly	Arg	Leu	Ile	Thr	Ala	Asn	Pro	Ile	Val	Thr	Asp	
625				630						635					640	
Lys	Glu	Lys	Pro	Val	Asn	Ile	Glu	Ala	Glu	Pro	Pro	Phe	Gly	Glu	Ser	
				645					650					655		
Tyr	Ile	Val	Val	Gly	Ala	Gly	Glu	Lys	Ala	Leu	Lys	Leu	Ser	Trp	Phe	
			660					665					670			
Lys	Lys	Gly	Ser	Ser	Ile	Gly	Lys	Met	Phe	Glu	Ala	Thr	Ala	Arg	Gly	
		675					680					685				
Ala	Arg	Arg	Met	Ala	Ile	Leu	Gly	Asp	Thr	Ala	Trp	Asp	Phe	Gly	Ser	
	690				695						700					
Ile	Gly	Gly	Val	Phe	Thr	Ser	Val	Gly	Lys	Leu	Ile	His	Gln	Ile	Phe	
705				710						715					720	
Gly	Thr	Ala	Tyr	Gly	Val	Leu	Phe	Ser	Gly	Val	Ser	Trp	Thr	Met	Lys	
				725					730					735		
Ile	Gly	Ile	Gly	Ile	Leu	Leu	Thr	Trp	Leu	Gly	Leu	Asn	Ser	Arg	Ser	
			740					745					750			
Thr	Ser	Leu	Ser	Met	Thr	Cys	Ile	Ala	Val	Gly	Met	Val	Thr	Leu	Tyr	
		755					760					765				
Leu	Gly	Val	Met	Val	Gln	Ala	Asp	Ser	Gly	Cys	Val	Ile	Asn	Trp	Lys	
	770					775					780					
Gly	Arg	Glu	Leu	Lys	Cys	Gly	Ser	Gly	Ile	Phe	Val	Thr	Asn	Glu	Val	
785				790						795					800	
His	Thr	Trp	Thr	Glu	Gln	Tyr	Lys	Phe	Gln	Ala	Asp	Ser	Pro	Lys	Arg	
				805					810					815		
Leu	Ser	Ala	Ala	Ile	Gly	Lys	Ala	Trp	Glu	Glu	Gly	Val	Cys	Gly	Ile	
			820					825					830			
Arg	Ser	Ala	Thr	Arg	Leu	Glu	Asn	Ile	Met	Trp	Lys	Gln	Ile	Ser	Asn	
		835					840					845				
Glu	Leu	Asn	His	Ile	Leu	Leu	Glu	Asn	Asp	Met	Lys	Phe	Thr	Val	Val	
	850					855					860					
Val	Gly	Asp	Val	Ser	Gly	Ile	Leu	Ala	Gln	Gly	Lys	Lys	Met	Ile	Arg	
865					870					875					880	
Pro	Gln	Pro	Met	Glu	His	Lys	Tyr	Ser	Trp	Lys	Ser	Trp	Gly	Lys	Ala	
				885					890					895		
Lys	Ile	Ile	Gly	Ala	Asp	Val	Gln	Asn	Thr	Thr	Phe	Ile	Ile	Asp	Gly	
			900					905					910			
Pro	Asn	Thr	Pro	Glu	Cys	Pro	Asp	Asn	Gln	Arg	Ala	Trp	Asn	Ile	Trp	
		915					920					925				
Glu	Val	Glu	Asp	Tyr	Gly	Phe	Gly	Ile	Phe	Thr	Thr	Asn	Ile	Trp	Leu	
	930					935						940				
Lys	Leu	Arg	Asp	Ser	Tyr	Thr	Gln	Val	Cys	Asp	His	Arg	Leu	Met	Ser	
945					950					955					960	
Ala	Ala	Ile	Lys	Asp	Ser	Lys	Ala	Val	His	Ala	Asp	Met	Gly	Tyr	Trp	
				965					970					975		
Ile	Glu	Ser	Glu	Lys	Asn	Glu	Thr	Trp	Lys	Leu	Ala	Arg	Ala	Ser	Phe	
			980					985					990			

Ile	Glu	Val	Lys	Thr	Cys	Ile	Trp	Pro	Lys	Ser	His	Thr	Leu	Trp	Ser		
		995					1000					1005					
Asn	Gly	Val	Leu	Glu	Ser	Glu	Met	Ile	Ile	Pro	Lys	Ile	Tyr	Gly	Gly		
	1010					1015					1020						
Pro	Ile	Ser	Gln	His	Asn	Tyr	Arg	Pro	Gly	Tyr	Phe	Thr	Gln	Thr	Ala		
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Gly	Pro	Trp	His	Leu	Gly	Lys	Leu	Glu	Leu	Asp	Phe	Asp	Leu	Cys	Glu		
			1045					1050						1055			
Gly	Thr	Thr	Val	Val	Val	Asp	Glu	His	Cys	Gly	Asn	Arg	Gly	Pro	Ser		
			1060					1065					1070				
Leu	Arg	Thr	Thr	Thr	Val	Thr	Gly	Lys	Thr	Ile	His	Glu	Trp	Cys	Cys		
	1075						1080					1085					
Arg	Ser	Cys	Thr	Leu	Pro	Pro	Leu	Arg	Phe	Lys	Gly	Glu	Asp	Gly	Cys		
	1090					1095					1100						
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Val	Lys	Ser	Met	Val	Ser	Ala	Gly	Ser	Gly	Glu	Val	Asp	Ser	Phe	Ser		
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Arg	Trp	Ser	Arg	Lys	Met	Leu	Met	Thr	Gly	Thr	Leu	Ala	Val	Phe	Leu		
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Leu	Leu	Thr	Met	Gly	Gln	Leu	Thr	Trp	Asn	Asp	Leu	Ile	Arg	Leu	Cys		
	1170				1175					1180							
Ile	Met	Val	Gly	Ala	Asn	Ala	Ser	Asp	Lys	Met	Gly	Met	Gly	Thr	Thr		
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Tyr	Leu	Ala	Leu	Met	Ala	Thr	Phe	Arg	Met	Arg	Pro	Met	Phe	Ala	Val		
			1205					1210					1215				
Gly	Leu	Leu	Phe	Arg	Arg	Leu	Thr	Ser	Arg	Glu	Val	Leu	Leu	Leu	Thr		
			1220					1225					1230				
Val	Gly	Leu	Ser	Leu	Val	Ala	Ser	Val	Glu	Leu	Pro	Asn	Ser	Leu	Glu		
	1235					1240						1245					
Glu	Leu	Gly	Asp	Gly	Leu	Ala	Met	Gly	Ile	Met	Met	Leu	Lys	Leu	Leu		
	1250					1255				1260							
Thr	Asp	Phe	Gln	Ser	His	Gln	Leu	Trp	Ala	Thr	Leu	Leu	Ser	Leu	Thr		
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Phe	Val	Lys	Thr	Thr	Phe	Ser	Leu	His	Tyr	Ala	Trp	Lys	Thr	Met	Ala		
			1285						1290					1295			
Met	Ile	Leu	Ser	Ile	Val	Ser	Leu	Phe	Pro	Leu	Cys	Leu	Ser	Thr	Thr		
		1300						1305					1310				
Ser	Gln	Lys	Thr	Thr	Trp	Leu	Pro	Val	Leu	Leu	Gly	Ser	Leu	Gly	Cys		
	1315					1320						1325					
Lys	Pro	Leu	Thr	Met	Phe	Leu	Ile	Thr	Glu	Asn	Lys	Ile	Trp	Gly	Arg		
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Lys	Ser	Trp	Pro	Leu	Asn	Glu	Gly	Ile	Met	Ala	Val	Gly	Ile	Val	Ser		
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Ile	Leu	Leu	Ser	Ser	Leu	Leu	Lys	Asn	Asp	Val	Pro	Leu	Ala	Gly	Pro		
			1365					1370						1375			
Leu	Ile	Ala	Gly	Gly	Met	Leu	Ile	Ala	Cys	Tyr	Val	Ile	Ser	Gly	Ser		
		1380						1385					1390				
Ser	Ala	Asp	Leu	Ser	Leu	Glu	Lys	Ala	Ala	Glu	Val	Ser	Trp	Glu	Glu		
	1395					1400						1405					
Glu	Ala	Glu	His	Ser	Gly	Ala	Ser	His	Asn	Ile	Leu	Val	Glu	Val	Gln		
	1410				1415					1420							
Asp	Asp	Gly	Thr	Met	Lys	Ile	Lys	Asp	Glu	Glu	Arg	Asp	Asp	Thr	Leu		
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Thr	Ile	Leu	Leu	Lys	Ala	Thr	Leu	Leu	Ala	Ile	Ser	Gly	Val	Tyr	Pro		
			1445					1450						1455			
Met	Ser	Ile	Pro	Ala	Thr	Leu	Phe	Val	Trp	Tyr	Phe	Trp	Gln	Lys	Lys		
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Lys	Gln	Arg	Ser	Gly	Val	Leu	Trp	Asp	Thr	Pro	Ser	Pro	Pro	Glu	Val		

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Glu	Arg	Ala	Val	Leu	Asp	Asp	Gly	Ile	Tyr	Arg	Ile	Leu	Gln	Arg	Gly	
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Leu	Leu	Gly	Arg	Ser	Gln	Val	Gly	Val	Gly	Val	Phe	Gln	Glu	Gly	Val	
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Phe	His	Thr	Met	Trp	His	Val	Thr	Arg	Gly	Ala	Val	Leu	Met	Tyr	Gln	
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Gly	Lys	Arg	Leu	Glu	Pro	Ser	Trp	Ala	Ser	Val	Lys	Lys	Asp	Leu	Ile	
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Ser	Tyr	Gly	Gly	Gly	Trp	Arg	Phe	Gln	Gly	Ser	Trp	Asn	Ala	Gly	Glu	
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Glu	Val	Gln	Val	Ile	Ala	Val	Glu	Pro	Gly	Lys	Asn	Pro	Lys	Asn	Val	
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Gln	Thr	Ala	Pro	Gly	Thr	Phe	Lys	Thr	Pro	Glu	Gly	Glu	Val	Gly	Ala	
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Ile	Ala	Leu	Asp	Phe	Lys	Pro	Gly	Thr	Ser	Gly	Ser	Pro	Ile	Val	Asn	
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Arg	Glu	Gly	Lys	Ile	Val	Gly	Leu	Tyr	Gly	Asn	Gly	Val	Val	Thr	Thr	
1620					1625					1630						
Ser	Gly	Thr	Tyr	Val	Ser	Ala	Ile	Ala	Gln	Ala	Lys	Ala	Ser	Gln	Glu	
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Gly	Pro	Leu	Pro	Glu	Ile	Glu	Asp	Glu	Val	Phe	Arg	Lys	Arg	Asn	Leu	
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Thr	Ile	Met	Asp	Leu	His	Pro	Gly	Ser	Gly	Lys	Thr	Arg	Arg	Tyr	Leu	
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Pro	Ala	Ile	Val	Arg	Glu	Ala	Ile	Arg	Arg	Asn	Val	Arg	Thr	Leu	Val	
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Leu	Ala	Pro	Thr	Arg	Val	Val	Ala	Ser	Glu	Met	Ala	Glu	Ala	Leu	Lys	
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Gly	Met	Pro	Ile	Arg	Tyr	Gln	Thr	Thr	Ala	Val	Lys	Ser	Glu	His	Thr	
1715					1720					1725						
Gly	Lys	Glu	Ile	Val	Asp	Leu	Met	Cys	His	Ala	Thr	Phe	Thr	Met	Arg	
1730					1735					1740						
Leu	Leu	Ser	Pro	Val	Arg	Val	Pro	Asn	Tyr	Asn	Met	Ile	Ile	Met	Asp	
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Gln	Asp	Glu	Glu	Arg	Asp	Ile	Pro	Glu	Arg	Ser	Trp	Asn	Ser	Gly	Tyr	
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Asp	Trp	Ile	Thr	Asp	Phe	Pro	Gly	Lys	Thr	Val	Trp	Phe	Val	Pro	Ser	
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Ile	Lys	Ser	Gly	Asn	Asp	Ile	Ala	Asn	Cys	Leu	Arg	Lys	Asn	Gly	Lys	
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Arg	Val	Val	Gln	Leu	Ser	Arg	Lys	Thr	Phe	Asp	Thr	Glu	Tyr	Gln	Lys	
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Thr	Lys	Asn	Asn	Asp	Trp	Asp	Tyr	Val	Val	Thr	Thr	Asp	Ile	Ser	Glu	
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Met	Gly	Ala	Asn	Phe	Arg	Ala	Asp	Arg	Val	Ile	Asp	Pro	Arg	Arg	Cys	
1890					1895					1900						
Leu	Lys	Pro	Val	Ile	Leu	Lys	Asp	Gly	Pro	Glu	Arg	Val	Ile	Leu	Ala	
1905					1910					1915					1920	
Gly	Pro	Met	Pro	Val	Thr	Val	Ala	Ser	Ala	Ala	Gln	Arg	Arg	Gly	Arg	
1925					1930					1935						
Ile	Gly	Arg	Asn	Gln	Asn	Lys	Glu	Gly	Asp	Gln	Tyr	Ile	Tyr	Met	Gly	
1940					1945					1950						
Gln	Pro	Leu	Asn	Asn	Asp	Glu	Asp	His	Ala	His	Trp	Thr	Glu	Ala	Lys	
1955					1960					1965						

Met Leu Leu Asp Asn Ile Asn Thr Pro Glu Gly Ile Ile Pro Ala Leu
 1970 1975 1980
 Phe Glu Pro Glu Arg Glu Lys Ser Ala Ala Ile Asp Gly Glu Tyr Arg
 1985 1990 1995 2000
 Leu Arg Gly Glu Ala Arg Lys Thr Phe Val Glu Leu Met Arg Arg Gly
 2005 2010 2015
 Asp Leu Pro Val Trp Leu Ser Tyr Lys Val Ala Ser Glu Gly Phe Gln
 2020 2025 2030
 Tyr Ser Asp Arg Arg Trp Cys Phe Asp Gly Glu Arg Asn Asn Gln Val
 2035 2040 2045
 Leu Glu Glu Asn Met Asp Val Glu Ile Trp Thr Lys Glu Gly Glu Arg
 2050 2055 2060
 Lys Lys Leu Arg Pro Arg Trp Leu Asp Ala Arg Thr Tyr Ser Asp Pro
 2065 2070 2075 2080
 Leu Ala Leu Arg Glu Phe Lys Glu Phe Ala Ala Gly Arg Arg Ser Val
 2085 2090 2095
 Ser Gly Asp Leu Ile Leu Glu Ile Gly Lys Leu Pro Gln His Leu Thr
 2100 2105 2110
 Gln Arg Ala Gln Asn Ala Leu Asp Asn Leu Val Met Leu His Asn Ser
 2115 2120 2125
 Glu Gln Gly Gly Lys Ala Tyr Arg His Ala Met Glu Glu Leu Pro Asp
 2130 2135 2140
 Thr Ile Glu Thr Leu Met Leu Leu Ala Leu Ile Ala Val Leu Thr Gly
 2145 2150 2155 2160
 Gly Val Thr Leu Phe Phe Leu Ser Gly Arg Gly Leu Gly Lys Thr Ser
 2165 2170 2175
 Ile Gly Leu Leu Cys Val Ile Ala Ser Ser Ala Leu Leu Trp Met Ala
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 Ser Val Glu Pro His Trp Ile Ala Ala Ser Ile Ile Leu Glu Phe Phe
 2195 2200 2205
 Leu Met Val Leu Leu Ile Pro Glu Pro Asp Arg Gln Arg Thr Pro Gln
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 Asp Asn Gln Leu Ala Tyr Val Val Ile Gly Leu Leu Phe Met Ile Leu
 2225 2230 2235 2240
 Thr Ala Ala Ala Asn Glu Met Gly Leu Leu Glu Thr Thr Lys Lys Asp
 2245 2250 2255
 Leu Gly Ile Gly His Ala Ala Ala Glu Asn His His His Ala Ala Met
 2260 2265 2270
 Leu Asp Val Asp Leu His Pro Ala Ser Ala Trp Thr Leu Tyr Ala Val
 2275 2280 2285
 Ala Thr Thr Ile Ile Thr Pro Met Met Arg His Thr Ile Glu Asn Thr
 2290 2295 2300
 Thr Ala Asn Ile Ser Leu Thr Ala Ile Ala Asn Gln Ala Ala Ile Leu
 2305 2310 2315 2320
 Met Gly Leu Asp Lys Gly Trp Pro Ile Ser Lys Met Asp Ile Gly Val
 2325 2330 2335
 Pro Leu Leu Ala Leu Gly Cys Tyr Ser Gln Val Asn Pro Leu Thr Leu
 2340 2345 2350
 Thr Ala Ala Val Phe Met Leu Val Ala His Tyr Ala Ile Ile Gly Pro
 2355 2360 2365
 Gly Leu Gln Ala Lys Ala Thr Arg Glu Ala Gln Lys Arg Thr Ala Ala
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 Gly Ile Met Lys Asn Pro Thr Val Asp Gly Ile Val Ala Ile Asp Leu
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 Asp Pro Val Val Tyr Asp Ala Lys Phe Glu Lys Gln Leu Gly Gln Ile
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 Met Leu Leu Ile Leu Cys Thr Ser Gln Ile Leu Leu Met Arg Thr Thr
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 Trp Ala Leu Cys Glu Ser Ile Thr Leu Ala Thr Gly Pro Leu Thr Thr
 2435 2440 2445
 Leu Trp Glu Gly Ser Pro Gly Lys Phe Trp Asn Thr Thr Ile Ala Val

2450	2455	2460
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Ala Phe Ser Leu Met Lys Ser Leu Gly Gly Arg Arg Gly Thr Gly		2480
	2485	2490
Ala Gln Gly Glu Thr Leu Gly Glu Lys Trp Lys Arg Gln Leu Asn Gln		2495
	2500	2505
Leu Ser Lys Ser Glu Phe Asn Thr Tyr Lys Arg Ser Gly Ile Ile Glu		2510
	2515	2520
Val Asp Arg Ser Glu Ala Lys Glu Gly Leu Lys Arg Gly Glu Pro Thr		2525
	2530	2535
Lys His Ala Val Ser Arg Gly Thr Ala Lys Leu Arg Trp Phe Val Glu		2540
2545	2550	2555
Arg Asn Leu Val Lys Pro Glu Gly Lys Val Ile Asp Leu Gly Cys Gly		2560
	2565	2570
Arg Gly Gly Trp Ser Tyr Tyr Cys Ala Gly Leu Lys Lys Val Thr Glu		2575
	2580	2585
Val Lys Gly Tyr Thr Lys Gly Gly Pro Gly His Glu Glu Pro Ile Pro		2590
	2595	2600
Met Ala Thr Tyr Gly Trp Asn Leu Val Lys Leu Tyr Ser Gly Lys Asp		2605
	2610	2615
Val Phe Phe Thr Pro Pro Glu Lys Cys Asp Thr Leu Leu Cys Asp Ile		2620
2625	2630	2635
Gly Glu Ser Ser Pro Asn Pro Thr Ile Glu Glu Gly Arg Thr Leu Arg		2640
	2645	2650
Val Leu Lys Met Val Glu Pro Trp Leu Arg Gly Asn Gln Phe Cys Ile		2655
	2660	2665
Lys Ile Leu Asn Pro Tyr Met Pro Ser Val Val Glu Thr Leu Glu Gln		2670
	2675	2680
Met Gln Arg Lys His Gly Gly Met Leu Val Arg Asn Pro Leu Ser Arg		2685
	2690	2695
Asn Ser Thr His Glu Met Tyr Trp Val Ser Cys Gly Thr Gly Asn Ile		2700
2705	2710	2715
Val Ser Ala Val Asn Met Thr Ser Arg Met Leu Leu Asn Arg Phe Thr		2720
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Met Ala His Arg Lys Pro Thr Tyr Glu Arg Asp Val Asp Leu Gly Ala		2735
	2740	2745
Gly Thr Arg His Val Ala Val Glu Pro Glu Val Ala Asn Leu Asp Ile		2750
	2755	2760
Ile Gly Gln Arg Ile Glu Asn Ile Lys Asn Gly His Lys Ser Thr Trp		2765
	2770	2775
His Tyr Asp Glu Asp Asn Pro Tyr Lys Thr Trp Ala Tyr His Gly Ser		2780
2785	2790	2795
Tyr Glu Val Lys Pro Ser Gly Ser Ala Ser Ser Met Val Asn Gly Val		2800
	2805	2810
Val Arg Leu Leu Thr Lys Pro Trp Asp Val Ile Pro Met Val Thr Gln		2815
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Ile Ala Met Thr Asp Thr Thr Pro Phe Gly Gln Gln Arg Val Phe Lys		2830
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Glu Lys Val Asp Thr Arg Thr Pro Lys Ala Lys Arg Gly Thr Ala Gln		2845
	2850	2855
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2865	2870	2875
Lys Lys Pro Arg Ile Cys Thr Arg Glu Glu Phe Thr Arg Lys Val Arg		2880
	2885	2890
Ser Asn Ala Ala Ile Gly Ala Val Phe Val Asp Glu Asn Gln Trp Asn		2895
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Ser Ala Lys Glu Ala Val Glu Asp Glu Arg Phe Trp Asp Leu Val His		2910
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Arg Glu Arg Glu Leu His Lys Gln Gly Lys Cys Ala Thr Cys Val Tyr		2925
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		2940

Asn Met Met Gly Lys Arg Glu Lys Lys Leu Gly Glu Phe Gly Lys Ala
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 Lys Gly Ser Arg Ala Ile Trp Tyr Met Trp Leu Gly Ala Arg Phe Leu
 2965 2970 2975
 Glu Phe Glu Ala Leu Gly Phe Met Asn Glu Asp His Trp Phe Ser Arg
 2980 2985 2990
 Glu Asn Ser Leu Ser Gly Val Glu Gly Glu Gly Leu His Lys Leu Gly
 2995 3000 3005
 Tyr Ile Leu Arg Asp Ile Ser Lys Ile Pro Gly Gly Asn Met Tyr Ala
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 Asp Asp Thr Ala Gly Trp Asp Thr Arg Ile Thr Glu Asp Asp Leu Gln
 3025 3030 3035 3040
 Asn Glu Ala Lys Ile Thr Asp Ile Met Glu Pro Glu His Ala Leu Leu
 3045 3050 3055
 Ala Thr Ser Ile Phe Lys Leu Thr Tyr Gln Asn Lys Val Val Arg Val
 3060 3065 3070
 Gln Arg Pro Ala Lys Asn Gly Thr Val Met Asp Val Ile Ser Arg Arg
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 Asp Gln Arg Gly Ser Gly Gln Val Gly Thr Tyr Gly Leu Asn Thr Phe
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 Thr Asn Met Glu Ala Gln Leu Ile Arg Gln Met Glu Ser Glu Gly Ile
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 Phe Ser Pro Ser Glu Leu Glu Thr Pro Asn Leu Ala Glu Arg Val Leu
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 Asp Trp Leu Lys Lys His Gly Thr Glu Arg Leu Lys Arg Met Ala Ile
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 Ser Gly Asp Asp Cys Val Val Lys Pro Ile Asp Asp Arg Phe Ala Thr
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 Ala Leu Thr Ala Leu Asn Asp Met Gly Lys Val Arg Lys Asp Ile Pro
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 Gln Trp Glu Pro Ser Lys Gly Trp Asn Asp Trp Gln Gln Val Pro Phe
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 Cys Ser His His Phe His Gln Leu Ile Met Lys Asp Gly Arg Glu Ile
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 Val Val Pro Cys Arg Asn Gln Asp Glu Leu Val Gly Arg Ala Arg Val
 3220 3225 3230
 Ser Gln Gly Ala Gly Trp Ser Leu Arg Glu Thr Ala Cys Leu Gly Lys
 3235 3240 3245
 Ser Tyr Ala Gln Met Trp Gln Leu Met Tyr Phe His Arg Arg Asp Leu
 3250 3255 3260
 Arg Leu Ala Ala Asn Ala Ile Cys Ser Ala Val Pro Val Asp Trp Val
 3265 3270 3275 3280
 Pro Thr Ser Arg Thr Thr Trp Ser Ile His Ala His His Gln Trp Met
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 Thr Thr Glu Asp Met Leu Ser Val Trp Asn Arg Val Trp Ile Glu Glu
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 3315 3320 3325
 Pro Tyr Leu Gly Lys Arg Glu Asp Arg Trp Cys Gly Ser Leu Ile Gly
 3330 3335 3340
 Leu Thr Ala Arg Ala Thr Trp Ala Thr Asn Ile Gln Val Ala Ile Asn
 3345 3350 3355 3360
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 3380 3385 3390

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 <211> 3391
 <212> PRT

<213> Dengue 2 virus strain NGC

<400> 21

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			20					25					30		
Phe	Ser	Leu	Gly	Met	Leu	Gln	Gly	Arg	Gly	Pro	Leu	Lys	Leu	Phe	Met
		35					40					45			
Ala	Leu	Val	Ala	Phe	Leu	Arg	Phe	Leu	Thr	Ile	Pro	Pro	Thr	Ala	Gly
	50					55					60				
Ile	Leu	Lys	Arg	Trp	Gly	Thr	Ile	Lys	Lys	Ser	Lys	Ala	Ile	Asn	Val
65					70					75					80
Leu	Arg	Gly	Phe	Arg	Lys	Glu	Ile	Gly	Arg	Met	Leu	Asn	Ile	Leu	Asn
				85					90					95	
Arg	Arg	Arg	Arg	Thr	Ala	Gly	Met	Ile	Ile	Met	Leu	Ile	Pro	Thr	Val
				100				105					110		
Met	Ala	Phe	His	Leu	Thr	Thr	Arg	Asn	Gly	Glu	Pro	His	Met	Ile	Val
		115					120					125			
Ser	Arg	Gln	Glu	Lys	Gly	Lys	Ser	Leu	Leu	Phe	Lys	Thr	Glu	Asp	Gly
	130					135					140				
Val	Asn	Met	Cys	Thr	Leu	Met	Ala	Met	Asp	Leu	Gly	Glu	Leu	Cys	Glu
145					150					155					160
Asp	Thr	Ile	Thr	Tyr	Lys	Cys	Pro	Phe	Leu	Arg	Gln	Asn	Glu	Pro	Glu
				165					170					175	
Asp	Ile	Asp	Cys	Trp	Cys	Asn	Ser	Thr	Ser	Thr	Trp	Val	Thr	Tyr	Gly
			180					185					190		
Thr	Cys	Thr	Thr	Thr	Gly	Glu	His	Arg	Arg	Glu	Lys	Arg	Ser	Val	Ala
		195					200					205			
Leu	Val	Pro	His	Val	Gly	Met	Gly	Leu	Glu	Thr	Arg	Thr	Glu	Thr	Trp
	210					215					220				
Met	Ser	Ser	Glu	Gly	Ala	Trp	Lys	His	Ala	Gln	Arg	Ile	Glu	Thr	Trp
225					230					235					240
Ile	Leu	Arg	His	Pro	Gly	Phe	Thr	Ile	Met	Ala	Ala	Ile	Leu	Ala	Tyr
				245					250					255	
Thr	Ile	Gly	Thr	Thr	His	Phe	Gln	Arg	Ala	Leu	Ile	Phe	Ile	Leu	Leu
			260					265					270		
Thr	Ala	Val	Ala	Pro	Ser	Met	Thr	Met	Arg	Cys	Ile	Gly	Ile	Ser	Asn
		275					280					285			
Arg	Asp	Phe	Val	Glu	Gly	Val	Ser	Gly	Gly	Ser	Trp	Val	Asp	Ile	Val
	290					295					300				
Leu	Glu	His	Gly	Ser	Cys	Val	Thr	Thr	Met	Ala	Lys	Asn	Lys	Pro	Thr
305					310					315					320
Leu	Asp	Phe	Glu	Leu	Ile	Lys	Thr	Glu	Ala	Lys	Gln	Pro	Ala	Thr	Leu
				325					330					335	
Arg	Lys	Tyr	Cys	Ile	Glu	Ala	Lys	Leu	Thr	Asn	Thr	Thr	Thr	Asp	Ser
			340					345					350		
Arg	Cys	Pro	Thr	Gln	Gly	Glu	Pro	Ser	Leu	Asn	Glu	Glu	Gln	Asp	Lys
		355					360					365			
Arg	Phe	Val	Cys	Lys	His	Ser	Met	Val	Asp	Arg	Gly	Trp	Gly	Asn	Gly
	370					375					380				
Cys	Gly	Leu	Phe	Gly	Lys	Gly	Gly	Ile	Val	Thr	Cys	Ala	Met	Phe	Thr
385					390					395					400
Cys	Lys	Lys	Asn	Met	Lys	Gly	Lys	Val	Val	Gln	Pro	Glu	Asn	Leu	Glu
				405					410					415	
Tyr	Thr	Ile	Val	Ile	Thr	Pro	His	Ser	Gly	Glu	Glu	His	Ala	Val	Gly
			420					425					430		
Asn	Asp	Thr	Gly	Lys	His	Gly	Lys	Glu	Ile	Lys	Ile	Thr	Pro	Gln	Ser
		435					440					445			
Ser	Ile	Thr	Glu	Ala	Glu	Leu	Thr	Gly	Tyr	Gly	Thr	Val	Thr	Met	Glu
	450					455					460				

Cys	Ser	Pro	Arg	Thr	Gly	Leu	Asp	Phe	Asn	Glu	Met	Val	Leu	Leu	Gln
465					470					475					480
Met	Glu	Asn	Lys	Ala	Trp	Leu	Val	His	Arg	Gln	Trp	Phe	Leu	Asp	Leu
				485					490					495	
Pro	Leu	Pro	Trp	Leu	Pro	Gly	Ala	Asp	Thr	Gln	Gly	Ser	Asn	Trp	Ile
			500					505					510		
Gln	Lys	Glu	Thr	Leu	Val	Thr	Phe	Lys	Asn	Pro	His	Ala	Lys	Lys	Gln
		515					520					525			
Asp	Val	Val	Val	Leu	Gly	Ser	Gln	Glu	Gly	Ala	Met	His	Thr	Ala	Leu
	530					535					540				
Thr	Gly	Ala	Thr	Glu	Ile	Gln	Met	Ser	Ser	Gly	Asn	Leu	Leu	Phe	Thr
545					550					555					560
Gly	His	Leu	Lys	Cys	Arg	Leu	Arg	Met	Asp	Lys	Leu	Gln	Leu	Lys	Gly
				565					570					575	
Met	Ser	Tyr	Ser	Met	Cys	Thr	Gly	Lys	Phe	Lys	Val	Val	Lys	Glu	Ile
			580					585					590		
Ala	Glu	Thr	Gln	His	Gly	Thr	Ile	Val	Ile	Arg	Val	Gln	Tyr	Glu	Gly
		595					600					605			
Asp	Gly	Ser	Pro	Cys	Lys	Ile	Pro	Phe	Glu	Ile	Met	Asp	Leu	Glu	Lys
	610					615					620				
Arg	His	Val	Leu	Gly	Arg	Leu	Ile	Thr	Val	Asn	Pro	Ile	Val	Thr	Glu
625					630					635					640
Lys	Asp	Ser	Pro	Val	Asn	Ile	Glu	Ala	Glu	Pro	Pro	Phe	Gly	Asp	Ser
				645					650					655	
Tyr	Ile	Ile	Ile	Gly	Val	Glu	Pro	Gly	Gln	Leu	Lys	Leu	Asn	Trp	Phe
			660					665					670		
Lys	Lys	Gly	Ser	Ser	Ile	Gly	Gln	Met	Ile	Glu	Thr	Thr	Met	Arg	Gly
		675					680					685			
Ala	Lys	Arg	Met	Ala	Ile	Leu	Gly	Asp	Thr	Ala	Trp	Asp	Phe	Gly	Ser
	690					695					700				
Leu	Gly	Gly	Val	Phe	Thr	Ser	Ile	Gly	Lys	Ala	Leu	His	Gln	Val	Phe
705					710					715					720
Gly	Ala	Ile	Tyr	Gly	Ala	Ala	Phe	Ser	Gly	Val	Ser	Trp	Thr	Met	Lys
				725					730					735	
Ile	Leu	Ile	Gly	Val	Ile	Ile	Thr	Trp	Ile	Gly	Met	Asn	Ser	Arg	Ser
			740					745				750			
Thr	Ser	Leu	Ser	Val	Ser	Leu	Val	Leu	Val	Gly	Val	Val	Thr	Leu	Tyr
		755					760					765			
Leu	Gly	Val	Met	Val	Gln	Ala	Asp	Ser	Gly	Cys	Val	Val	Ser	Trp	Lys
	770					775					780				
Asn	Lys	Glu	Leu	Lys	Cys	Gly	Ser	Gly	Ile	Phe	Ile	Thr	Asp	Asn	Val
785					790					795					800
His	Thr	Trp	Thr	Glu	Gln	Tyr	Lys	Phe	Gln	Pro	Glu	Ser	Pro	Ser	Lys
				805					810					815	
Leu	Ala	Ser	Ala	Ile	Gln	Lys	Ala	His	Glu	Glu	Gly	Ile	Cys	Gly	Ile
			820					825					830		
Arg	Ser	Val	Thr	Arg	Leu	Glu	Asn	Leu	Met	Trp	Lys	Gln	Ile	Thr	Pro
		835					840					845			
Glu	Leu	Asn	His	Ile	Leu	Ser	Glu	Asn	Glu	Val	Lys	Leu	Thr	Ile	Met
	850					855					860				
Thr	Gly	Asp	Ile	Lys	Gly	Ile	Met	Gln	Ala	Gly	Lys	Arg	Ser	Leu	Gln
865					870					875					880
Pro	Gln	Pro	Thr	Glu	Leu	Lys	Tyr	Ser	Trp	Lys	Thr	Trp	Gly	Lys	Ala
				885					890					895	
Lys	Met	Leu	Ser	Thr	Glu	Ser	His	Asn	Gln	Thr	Phe	Leu	Ile	Asp	Gly
			900					905					910		
Pro	Glu	Thr	Ala	Glu	Cys	Pro	Asn	Thr	Asn	Arg	Ala	Trp	Asn	Ser	Leu
		915					920					925			
Glu	Val	Glu	Asp	Tyr	Gly	Phe	Gly	Val	Phe	Thr	Thr	Asn	Ile	Trp	Leu
	930					935					940				
Lys	Leu	Arg	Glu	Lys	Gln	Asp	Val	Phe	Cys	Asp	Ser	Lys	Leu	Met	Ser

945		950		955		960
Ala Ala Ile Lys Asp	Asn Arg Ala Val His	Ala Asp Met Gly Tyr Trp				
	965	970				
Ile Glu Ser Ala Leu	Asn Asp Thr Trp Lys	Ile Glu Lys Ala Ser Phe				
	980	985				
Ile Glu Val Lys Ser	Cys His Trp Pro Lys	Ser His Thr Leu Trp Ser				
	995	1000				
Asn Gly Val Leu Glu	Ser Glu Met Ile Ile	Pro Lys Asn Phe Ala Gly				
	1010	1015				
Pro Val Ser Gln His	Asn Tyr Arg Pro Gly	Tyr His Thr Gln Thr Ala				
	1025	1030				
Gly Pro Trp Trp His	Leu Gly Lys Leu Glu	Met Asp Phe Asp Phe Cys Glu				
	1045	1050				
Gly Thr Thr Val Val	Val Thr Glu Asp Cys	Gly Asn Arg Gly Pro Ser				
	1060	1065				
Leu Arg Thr Thr Thr	Ala Ser Gly Lys Leu	Ile Thr Glu Trp Cys Cys				
	1075	1080				
Arg Ser Cys Thr Leu	Pro Pro Leu Arg Tyr	Arg Gly Glu Asp Gly Cys				
	1090	1095				
Trp Tyr Gly Met Glu	Ile Arg Pro Leu Lys	Glu Lys Glu Glu Asn Leu				
	1105	1110				
Val Asn Ser Leu Val	Thr Ala Gly His Gly	Gln Ile Asp Asn Phe Ser				
	1125	1130				
Leu Gly Val Leu Gly	Met Ala Leu Phe Leu	Glu Glu Met Leu Arg Thr				
	1140	1145				
Arg Val Gly Thr Lys	His Ala Ile Leu Leu	Val Ala Val Ser Phe Val				
	1155	1160				
Thr Leu Ile Thr Gly	Asn Met Ser Phe Arg	Asp Leu Gly Arg Val Met				
	1170	1175				
Val Met Val Gly Ala	Thr Met Thr Asp Asp	Ile Gly Met Gly Val Thr				
	1185	1190				
Tyr Leu Ala Leu Leu	Ala Ala Phe Lys Val	Arg Pro Thr Phe Ala Ala				
	1205	1210				
Gly Leu Leu Leu Arg	Lys Leu Thr Ser Lys	Glu Leu Met Met Thr Thr				
	1220	1225				
Ile Gly Ile Val Leu	Leu Ser Gln Ser Thr	Ile Pro Glu Thr Ile Leu				
	1235	1240				
Glu Leu Thr Asp Ala	Leu Ala Leu Gly Met	Met Val Leu Lys Met Val				
	1250	1255				
Arg Lys Met Glu Lys	Tyr Gln Leu Ala Val	Thr Ile Met Ala Ile Leu				
	1265	1270				
Cys Val Pro Asn Ala	Val Ile Leu Gln Asn	Ala Trp Lys Val Ser Cys				
	1285	1290				
Thr Ile Leu Ala Val	Val Ser Val Ser Pro	Leu Phe Leu Thr Ser Ser				
	1300	1305				
Gln Gln Lys Ala Asp	Trp Ile Pro Leu Ala	Leu Thr Ile Lys Gly Leu				
	1315	1320				
Asn Pro Thr Ala Ile	Phe Leu Thr Thr Leu	Ser Arg Thr Asn Lys Lys				
	1330	1335				
Arg Ser Trp Pro Leu	Asn Glu Ala Ile Met	Ala Val Gly Met Val Ser				
	1345	1350				
Ile Leu Ala Ser Ser	Leu Leu Lys Asn Asp	Ile Pro Met Thr Gly Pro				
	1365	1370				
Leu Val Ala Gly Leu	Leu Thr Val Cys Tyr	Val Leu Thr Gly Arg				
	1380	1385				
Ser Ala Asp Leu Glu	Leu Glu Arg Ala Ala	Asp Val Lys Trp Glu Asp				
	1395	1400				
Gln Ala Glu Ile Ser	Gly Ser Ser Pro Ile	Leu Ser Ile Thr Ile Ser				
	1410	1415				
Glu Asp Gly Ser Met	Ser Ile Lys Asn Glu	Glu Glu Glu Gln Thr Leu				
	1425	1430				
		1435				1440

Thr Ile Leu Ile Arg Thr Gly Leu Leu Val Ile Ser Gly Leu Phe Pro
 1445 1450 1455
 Val Ser Ile Pro Ile Thr Ala Ala Ala Trp Tyr Leu Trp Glu Val Lys
 1460 1465 1470
 Lys Gln Arg Ala Gly Val Leu Trp Asp Val Pro Ser Pro Pro Val
 1475 1480 1485
 Gly Lys Ala Glu Leu Glu Asp Gly Ala Tyr Arg Ile Lys Gln Lys Gly
 1490 1495 1500
 Ile Leu Gly Tyr Ser Gln Ile Gly Ala Gly Val Tyr Lys Glu Gly Thr
 1505 1510 1515 1520
 Phe His Thr Met Trp His Val Thr Arg Gly Ala Val Leu Met His Lys
 1525 1530 1535
 Gly Lys Arg Ile Glu Pro Ser Trp Ala Asp Val Lys Lys Asp Leu Ile
 1540 1545 1550
 Ser Tyr Gly Gly Gly Trp Lys Leu Glu Gly Glu Trp Lys Glu Gly Glu
 1555 1560 1565
 Glu Val Gln Val Leu Ala Leu Glu Pro Gly Lys Asn Pro Arg Ala Val
 1570 1575 1580
 Gln Thr Lys Pro Gly Leu Phe Lys Thr Asn Ala Gly Thr Ile Gly Ala
 1585 1590 1595 1600
 Val Ser Leu Asp Phe Ser Pro Gly Thr Ser Gly Ser Pro Ile Ile Asp
 1605 1610 1615
 Lys Lys Gly Lys Val Val Gly Leu Tyr Gly Asn Gly Val Val Thr Arg
 1620 1625 1630
 Ser Gly Ala Tyr Val Ser Ala Ile Ala Gln Thr Glu Lys Ser Ile Glu
 1635 1640 1645
 Asp Asn Pro Glu Ile Glu Asp Asp Ile Phe Arg Lys Arg Lys Leu Thr
 1650 1655 1660
 Ile Met Asp Leu His Pro Gly Ala Gly Lys Thr Lys Arg Tyr Leu Pro
 1665 1670 1675 1680
 Ala Ile Val Arg Glu Ala Ile Lys Arg Gly Leu Arg Thr Leu Ile Leu
 1685 1690 1695
 Ala Pro Thr Arg Val Val Ala Ala Glu Met Glu Glu Ala Leu Arg Gly
 1700 1705 1710
 Leu Pro Ile Arg Tyr Gln Thr Pro Ala Ile Arg Ala Glu His Thr Gly
 1715 1720 1725
 Arg Glu Ile Val Asp Leu Met Cys His Ala Thr Phe Thr Met Arg Leu
 1730 1735 1740
 Leu Ser Pro Val Arg Val Pro Asn Tyr Asn Leu Ile Ile Met Asp Glu
 1745 1750 1755 1760
 Ala His Phe Thr Asp Pro Ala Ser Ile Ala Ala Arg Gly Tyr Ile Ser
 1765 1770 1775
 Thr Arg Val Glu Met Gly Glu Ala Ala Gly Ile Phe Met Thr Ala Thr
 1780 1785 1790
 Pro Pro Gly Ser Arg Asp Pro Phe Pro Gln Ser Asn Ala Pro Ile Met
 1795 1800 1805
 Asp Glu Glu Arg Glu Ile Pro Glu Arg Ser Trp Ser Ser Gly His Glu
 1810 1815 1820
 Trp Val Thr Asp Phe Lys Gly Lys Thr Val Trp Phe Val Pro Ser Ile
 1825 1830 1835 1840
 Lys Ala Gly Asn Asp Ile Ala Ala Cys Leu Arg Lys Asn Gly Lys Lys
 1845 1850 1855
 Val Ile Gln Leu Ser Arg Lys Thr Phe Asp Ser Glu Tyr Val Lys Thr
 1860 1865 1870
 Arg Thr Asn Asp Trp Asp Phe Val Val Thr Thr Asp Ile Ser Glu Met
 1875 1880 1885
 Gly Ala Asn Phe Lys Ala Glu Arg Val Ile Asp Pro Arg Arg Cys Met
 1890 1895 1900
 Lys Pro Val Ile Leu Thr Asp Gly Glu Glu Arg Val Ile Leu Ala Gly
 1905 1910 1915 1920
 Pro Met Pro Val Thr His Ser Ser Ala Ala Gln Arg Arg Gly Arg Ile

																1925				1930				1935			
Gly	Arg	Asn	Pro	Lys	Asn	Glu	Asn	Asp	Gln	Tyr	Ile	Tyr	Met	Gly	Glu												
																1940				1945				1950			
Pro	Leu	Glu	Asn	Asp	Glu	Asp	Cys	Ala	His	Trp	Lys	Glu	Ala	Lys	Met												
																1955				1960				1965			
Leu	Leu	Asp	Asn	Ile	Asn	Thr	Pro	Glu	Gly	Ile	Ile	Pro	Ser	Met	Phe												
																1970				1975				1980			
Glu	Pro	Glu	Arg	Glu	Lys	Val	Asp	Ala	Ile	Asp	Gly	Glu	Tyr	Arg	Leu												
																1985				1990				1995			
Arg	Gly	Glu	Ala	Arg	Lys	Thr	Phe	Val	Asp	Leu	Met	Arg	Arg	Gly	Asp												
																2005				2010				2015			
Leu	Pro	Val	Trp	Leu	Ala	Tyr	Arg	Val	Ala	Ala	Glu	Gly	Ile	Asn	Tyr												
																2020				2025				2030			
Ala	Asp	Arg	Arg	Trp	Cys	Phe	Asp	Gly	Ile	Lys	Asn	Asn	Gln	Ile	Leu												
																2035				2040				2045			
Glu	Glu	Asn	Val	Glu	Val	Glu	Ile	Trp	Thr	Lys	Glu	Gly	Glu	Arg	Lys												
																2050				2055				2060			
Lys	Leu	Lys	Pro	Arg	Trp	Leu	Asp	Ala	Arg	Ile	Tyr	Ser	Asp	Pro	Leu												
																2065				2070				2075			
Thr	Leu	Lys	Glu	Phe	Lys	Glu	Phe	Ala	Ala	Gly	Arg	Lys	Ser	Leu	Thr												
																2085				2090				2095			
Leu	Asn	Leu	Ile	Thr	Glu	Met	Gly	Arg	Leu	Pro	Thr	Phe	Met	Thr	Gln												
																2100				2105				2110			
Lys	Ala	Arg	Asp	Ala	Leu	Asp	Asn	Leu	Ala	Val	Leu	His	Thr	Ala	Glu												
																2115				2120				2125			
Ala	Gly	Gly	Arg	Ala	Tyr	Asn	His	Ala	Leu	Ser	Glu	Leu	Pro	Glu	Thr												
																2130				2135				2140			
Leu	Glu	Thr	Leu	Leu	Leu	Leu	Thr	Leu	Leu	Ala	Thr	Val	Thr	Gly	Gly												
																2145				2150				2155			
Ile	Phe	Leu	Phe	Leu	Met	Ser	Gly	Arg	Gly	Ile	Gly	Lys	Met	Thr	Leu												
																2165				2170				2175			
Gly	Met	Cys	Cys	Ile	Ile	Thr	Ala	Ser	Ile	Leu	Leu	Trp	Tyr	Ala	Gln												
																2180				2185				2190			
Ile	Gln	Pro	His	Trp	Ile	Ala	Ala	Ser	Ile	Ile	Leu	Glu	Phe	Phe	Leu												
																2195				2200				2205			
Ile	Val	Leu	Leu	Ile	Pro	Glu	Pro	Glu	Lys	Gln	Arg	Thr	Pro	Gln	Asp												
																2210				2215				2220			
Asn	Gln	Leu	Thr	Tyr	Val	Val	Ile	Ala	Ile	Leu	Thr	Val	Val	Ala	Ala												
																2225				2230				2235			
Thr	Met	Ala	Asn	Glu	Met	Gly	Phe	Leu	Glu	Lys	Thr	Lys	Lys	Asp	Leu												
																2245				2250				2255			
Gly	Leu	Gly	Ser	Ile	Thr	Thr	Gln	Gln	Pro	Glu	Ser	Asn	Ile	Leu	Asp												
																2260				2265				2270			
Ile	Asp	Leu	Arg	Pro	Ala	Ser	Ala	Trp	Thr	Leu	Tyr	Ala	Val	Ala	Thr												
																2275				2280				2285			
Thr	Phe	Val	Thr	Pro	Met	Leu	Arg	His	Ser	Ile	Glu	Asn	Ser	Ser	Val												
																2290				2295				2300			
Asn	Val	Ser	Leu	Thr	Ala	Ile	Ala	Asn	Gln	Ala	Thr	Val	Leu	Met	Gly												
																2305				2310				2315			
Leu	Gly	Lys	Gly	Trp	Pro	Leu	Ser	Lys	Met	Asp	Ile	Gly	Val	Pro	Leu												
																2325				2330				2335			
Leu	Ala</																										

Leu Val Leu Cys Val Thr Gln Val Leu Met Met Arg Thr Thr Trp Ala
 2420 2425 2430
 Leu Cys Glu Ala Leu Thr Leu Ala Thr Gly Pro Ile Ser Thr Leu Trp
 2435 2440 2445
 Glu Gly Asn Pro Gly Arg Phe Trp Asn Thr Thr Ile Ala Val Ser Met
 2450 2455 2460
 Ala Asn Ile Phe Arg Gly Ser Tyr Leu Ala Gly Ala Gly Leu Leu Phe
 2465 2470 2475 2480
 Ser Ile Met Lys Asn Thr Thr Asn Thr Arg Arg Gly Thr Gly Asn Ile
 2485 2490 2495
 Gly Glu Thr Leu Gly Glu Lys Trp Lys Ser Arg Leu Asn Ala Leu Gly
 2500 2505 2510
 Lys Ser Glu Phe Gln Ile Tyr Lys Lys Ser Gly Ile Gln Glu Val Asp
 2515 2520 2525
 Arg Thr Leu Ala Lys Glu Gly Ile Lys Arg Gly Glu Thr Asp His His
 2530 2535 2540
 Ala Val Ser Arg Gly Ser Ala Lys Leu Arg Trp Phe Val Glu Arg Asn
 2545 2550 2555 2560
 Met Val Thr Pro Glu Gly Lys Val Val Asp Leu Gly Cys Gly Arg Gly
 2565 2570 2575
 Gly Trp Ser Tyr Trp Cys Gly Gly Leu Lys Asn Val Arg Glu Val Lys
 2580 2585 2590
 Gly Leu Thr Lys Gly Gly Pro Gly His Glu Glu Pro Ile Pro Met Ser
 2595 2600 2605
 Thr Tyr Gly Trp Asn Leu Val Arg Leu Gln Ser Gly Val Asp Val Phe
 2610 2615 2620
 Phe Thr Pro Pro Glu Lys Cys Asp Thr Leu Leu Cys Asp Ile Gly Glu
 2625 2630 2635 2640
 Ser Ser Pro Asn Pro Thr Val Glu Ala Gly Arg Thr Leu Arg Val Leu
 2645 2650 2655
 Asn Leu Val Glu Asn Trp Leu Asn Asn Asn Thr Gln Phe Cys Ile Lys
 2660 2665 2670
 Val Leu Asn Pro Tyr Met Pro Ser Val Ile Glu Lys Met Glu Ala Leu
 2675 2680 2685
 Gln Arg Lys Tyr Gly Gly Ala Leu Val Arg Asn Pro Leu Ser Arg Asn
 2690 2695 2700
 Ser Thr His Glu Met Tyr Trp Val Ser Asn Ala Ser Gly Asn Ile Val
 2705 2710 2715 2720
 Ser Ser Val Asn Met Ile Ser Arg Met Leu Ile Asn Arg Phe Thr Met
 2725 2730 2735
 Arg His Lys Lys Ala Thr Tyr Glu Pro Asp Val Asp Leu Gly Ser Gly
 2740 2745 2750
 Thr Arg Asn Ile Gly Ile Glu Ser Glu Ile Pro Asn Leu Asp Ile Ile
 2755 2760 2765
 Gly Lys Arg Ile Glu Lys Ile Lys Gln Glu His Glu Thr Ser Trp His
 2770 2775 2780
 Tyr Asp Gln Asp His Pro Tyr Lys Thr Trp Ala Tyr His Gly Ser Tyr
 2785 2790 2795 2800
 Glu Thr Lys Gln Thr Gly Ser Ala Ser Ser Met Val Asn Gly Val Val
 2805 2810 2815
 Arg Leu Leu Thr Lys Pro Trp Asp Val Val Pro Met Val Thr Gln Met
 2820 2825 2830
 Ala Met Thr Asp Thr Thr Pro Phe Gly Gln Gln Arg Val Phe Lys Glu
 2835 2840 2845
 Lys Val Asp Thr Arg Thr Gln Glu Pro Lys Glu Gly Thr Lys Lys Leu
 2850 2855 2860
 Met Lys Ile Thr Ala Glu Trp Leu Trp Lys Glu Leu Gly Lys Lys Lys
 2865 2870 2875 2880
 Thr Pro Arg Met Cys Thr Arg Glu Glu Phe Thr Arg Lys Val Arg Ser
 2885 2890 2895
 Asn Ala Ala Leu Gly Ala Ile Phe Thr Asp Glu Asn Lys Trp Lys Ser

2900					2905					2910					
Ala	Arg	Glu	Ala	Val	Glu	Asp	Ser	Arg	Phe	Trp	Glu	Leu	Val	Asp	Lys
2915					2920					2925					
Glu	Arg	Asn	Leu	His	Leu	Glu	Gly	Lys	Cys	Glu	Thr	Cys	Val	Tyr	Asn
2930					2935					2940					
Met	Met	Gly	Lys	Arg	Glu	Lys	Lys	Leu	Gly	Glu	Phe	Gly	Lys	Ala	Lys
2945					2950					2955					
Gly	Ser	Arg	Ala	Ile	Trp	Tyr	Met	Trp	Leu	Gly	Ala	Arg	Phe	Leu	Glu
2965					2970					2975					
Phe	Glu	Ala	Leu	Gly	Phe	Leu	Asn	Glu	Asp	His	Trp	Phe	Ser	Arg	Glu
2980					2985					2990					
Asn	Ser	Leu	Ser	Gly	Val	Glu	Gly	Gly	Leu	His	Lys	Leu	Gly	Tyr	
2995					3000					3005					
Ile	Leu	Arg	Asp	Val	Ser	Lys	Lys	Glu	Gly	Gly	Ala	Met	Tyr	Ala	Asp
3010					3015					3020					
Asp	Thr	Ala	Gly	Trp	Asp	Thr	Arg	Ile	Thr	Leu	Glu	Asp	Leu	Lys	Asn
3025					3030					3035					
Glu	Glu	Met	Val	Thr	Asn	His	Met	Glu	Gly	Glu	His	Lys	Lys	Leu	Ala
3045					3050					3055					
Glu	Ala	Ile	Phe	Lys	Leu	Thr	Tyr	Gln	Asn	Lys	Val	Val	Arg	Val	Gln
3060					3065					3070					
Arg	Pro	Thr	Pro	Arg	Gly	Thr	Val	Met	Asp	Ile	Ile	Ser	Arg	Arg	Asp
3075					3080					3085					
Gln	Arg	Gly	Ser	Gly	Gln	Val	Gly	Thr	Tyr	Gly	Leu	Asn	Thr	Phe	Thr
3090					3095					3100					
Asn	Met	Glu	Ala	Gln	Leu	Ile	Arg	Gln	Met	Glu	Gly	Glu	Gly	Val	Phe
3105					3110					3115					
Lys	Ser	Ile	Gln	His	Leu	Thr	Val	Thr	Glu	Glu	Ile	Ala	Val	Gln	Asn
3125					3130					3135					
Trp	Leu	Ala	Arg	Val	Gly	Arg	Glu	Arg	Leu	Ser	Arg	Met	Ala	Ile	Ser
3140					3145					3150					
Gly	Asp	Asp	Cys	Val	Val	Lys	Pro	Leu	Asp	Asp	Arg	Phe	Ala	Ser	Ala
3155					3160					3165					
Leu	Thr	Ala	Leu	Asn	Asp	Met	Gly	Lys	Val	Arg	Lys	Asp	Ile	Gln	Gln
3170					3175					3180					
Trp	Glu	Pro	Ser	Arg	Gly	Trp	Asn	Asp	Trp	Thr	Gln	Val	Pro	Phe	Cys
3185					3190					3195					
Ser	His	His	Phe	His	Glu	Leu	Ile	Met	Lys	Asp	Gly	Arg	Val	Leu	Val
3205					3210					3215					
Val	Pro	Cys	Arg	Asn	Gln	Asp	Glu	Leu	Ile	Gly	Arg	Ala	Arg	Ile	Ser
3220					3225					3230					
Gln	Gly	Ala	Gly	Trp	Ser	Leu	Arg	Glu	Thr	Ala	Cys	Leu	Gly	Lys	Ser
3235					3240					3245					
Tyr	Ala	Gln	Met	Trp	Ser	Leu	Met	Tyr	Phe	His	Arg	Arg	Asp	Leu	Arg
3250					3255					3260					
Leu	Ala	Ala	Asn	Ala	Ile	Cys	Ser	Ala	Val	Pro	Ser	His	Trp	Val	Pro
3265					3270					3275					
Thr	Ser	Arg	Thr	Thr	Trp	Ser	Ile	His	Ala	Lys	His	Glu	Trp	Met	Thr
3285					3290					3295					
Thr	Glu	Asp	Met	Leu	Thr	Val	Trp	Asn	Arg	Val	Trp	Ile	Gln	Glu	Asn
3300					3305					3310					
Pro	Trp	Met	Glu	Asp	Lys	Thr	Pro	Val	Glu	Ser	Trp	Glu	Glu	Ile	Pro
3315					3320					3325					
Tyr	Leu	Gly	Lys	Arg	Glu	Asp	Gln	Trp	Cys	Gly	Ser	Leu	Ile	Gly	Leu
3330					3335					3340					
Thr	Ser	Arg	Ala	Thr	Trp	Ala	Lys	Asn	Ile	Gln	Thr	Ala	Ile	Asn	Gln
3345					3350					3355					
Val	Arg	Ser	Leu	Ile	Gly	Asn	Glu	Glu	Tyr	Thr	Asp	Tyr	Met	Pro	Ser
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3380					3385					3390					

<210> 22
 <211> 3390
 <212> PRT
 <213> Dengue 3 virus strain H87

<400> 22

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			20					25					30		
Phe	Ser	Arg	Gly	Leu	Leu	Asn	Gly	Gln	Gly	Pro	Met	Lys	Leu	Val	Met
		35					40					45			
Ala	Phe	Ile	Ala	Phe	Leu	Arg	Phe	Leu	Ala	Ile	Pro	Pro	Thr	Ala	Gly
	50					55					60				
Val	Leu	Ala	Arg	Trp	Gly	Thr	Phe	Lys	Lys	Ser	Gly	Ala	Ile	Lys	Val
65					70					75					80
Leu	Lys	Gly	Phe	Lys	Lys	Glu	Ile	Ser	Asn	Met	Leu	Ser	Ile	Ile	Asn
				85					90					95	
Lys	Arg	Lys	Lys	Thr	Ser	Leu	Cys	Leu	Met	Met	Met	Leu	Pro	Ala	Thr
			100					105					110		
Leu	Ala	Phe	His	Leu	Thr	Ser	Arg	Asp	Gly	Glu	Pro	Arg	Met	Ile	Val
		115					120					125			
Gly	Lys	Asn	Glu	Arg	Gly	Lys	Ser	Leu	Leu	Phe	Lys	Thr	Ala	Ser	Gly
	130					135					140				
Ile	Asn	Met	Cys	Thr	Leu	Ile	Ala	Met	Asp	Leu	Gly	Glu	Met	Cys	Asp
145					150				155						160
Asp	Thr	Val	Thr	Tyr	Lys	Cys	Pro	His	Ile	Thr	Glu	Val	Glu	Pro	Glu
				165					170					175	
Asp	Ile	Asp	Cys	Trp	Cys	Asn	Leu	Thr	Ser	Thr	Trp	Val	Thr	Tyr	Gly
			180					185					190		
Thr	Cys	Asn	Gln	Ala	Gly	Glu	His	Arg	Arg	Asp	Lys	Arg	Ser	Val	Ala
		195					200					205			
Leu	Ala	Pro	His	Val	Gly	Met	Gly	Leu	Asp	Thr	Arg	Thr	Gln	Thr	Trp
	210					215					220				
Met	Ser	Ala	Glu	Gly	Ala	Trp	Arg	Gln	Val	Glu	Lys	Val	Glu	Thr	Trp
225					230					235					240
Ala	Leu	Arg	His	Pro	Gly	Phe	Thr	Ile	Leu	Ala	Leu	Phe	Leu	Ala	His
				245					250					255	
Tyr	Ile	Gly	Thr	Ser	Leu	Thr	Gln	Lys	Val	Val	Ile	Phe	Ile	Leu	Leu
			260					265					270		
Met	Leu	Val	Thr	Pro	Ser	Met	Thr	Met	Arg	Cys	Val	Gly	Val	Gly	Asn
		275					280					285			
Arg	Asp	Phe	Val	Glu	Gly	Leu	Ser	Gly	Ala	Thr	Trp	Val	Asp	Val	Val
	290					295					300				
Leu	Glu	His	Gly	Gly	Cys	Val	Thr	Thr	Met	Ala	Lys	Asn	Lys	Pro	Thr
305					310					315					320
Leu	Asp	Ile	Glu	Leu	Gln	Lys	Thr	Glu	Ala	Thr	Gln	Leu	Ala	Thr	Leu
				325					330					335	
Arg	Lys	Leu	Cys	Ile	Glu	Gly	Lys	Ile	Thr	Asn	Ile	Thr	Thr	Asp	Ser
			340					345					350		
Arg	Cys	Pro	Thr	Gln	Gly	Glu	Ala	Ile	Leu	Pro	Glu	Glu	Gln	Asp	Gln
		355					360					365			
Asn	Tyr	Val	Cys	Lys	His	Thr	Tyr	Val	Asp	Arg	Gly	Trp	Gly	Asn	Gly
	370					375					380				
Cys	Gly	Leu	Phe	Gly	Lys	Gly	Ser	Leu	Val	Thr	Cys	Ala	Lys	Phe	Gln
385					390					395					400
Cys	Leu	Glu	Ser	Ile	Glu	Gly	Lys	Val	Val	Gln	His	Glu	Asn	Leu	Lys
				405					410					415	
Tyr	Thr	Val	Ile	Ile	Thr	Val	His	Thr	Gly	Asp	Gln	His	Gln	Val	Gly

Asn	Glu	Thr	Gln	Gly	Val	Thr	Ala	Glu	Ile	Thr	Ser	Gln	Ala	Ser	Thr
		435					440					445			
Ala	Glu	Ala	Ile	Leu	Pro	Glu	Tyr	Gly	Thr	Leu	Gly	Leu	Glu	Cys	Ser
		450					455					460			
Pro	Arg	Thr	Gly	Leu	Asp	Phe	Asn	Glu	Met	Ile	Leu	Leu	Thr	Met	Lys
465					470					475					480
Asn	Lys	Ala	Trp	Met	Val	His	Arg	Gln	Trp	Phe	Phe	Asp	Leu	Pro	Leu
				485					490					495	
Pro	Trp	Thr	Ser	Gly	Ala	Thr	Thr	Lys	Thr	Pro	Thr	Trp	Asn	Arg	Lys
			500					505					510		
Glu	Leu	Leu	Val	Thr	Phe	Lys	Asn	Ala	His	Ala	Lys	Lys	Gln	Glu	Val
			515				520					525			
Val	Val	Leu	Gly	Ser	Gln	Glu	Gly	Ala	Met	His	Thr	Ala	Leu	Thr	Gly
			530			535					540				
Ala	Thr	Glu	Ile	Gln	Thr	Ser	Gly	Gly	Thr	Ser	Ile	Phe	Ala	Gly	His
545					550					555					560
Leu	Lys	Cys	Arg	Leu	Lys	Met	Asp	Lys	Leu	Lys	Leu	Lys	Gly	Met	Ser
				565					570					575	
Tyr	Ala	Met	Cys	Leu	Asn	Thr	Phe	Val	Leu	Lys	Lys	Glu	Val	Ser	Glu
			580					585					590		
Thr	Gln	His	Gly	Thr	Ile	Leu	Ile	Lys	Val	Glu	Tyr	Lys	Gly	Glu	Asp
		595					600					605			
Ala	Pro	Cys	Lys	Ile	Pro	Phe	Ser	Thr	Glu	Asp	Gly	Gln	Gly	Lys	Ala
		610				615					620				
His	Asn	Gly	Arg	Leu	Ile	Thr	Ala	Asn	Pro	Val	Val	Thr	Lys	Lys	Glu
625					630					635					640
Glu	Pro	Val	Asn	Ile	Glu	Ala	Glu	Pro	Pro	Phe	Gly	Glu	Ser	Asn	Ile
				645					650					655	
Val	Ile	Gly	Ile	Gly	Asp	Lys	Ala	Leu	Lys	Ile	Asn	Trp	Tyr	Arg	Lys
			660					665					670		
Gly	Ser	Ser	Ile	Gly	Lys	Met	Phe	Glu	Ala	Thr	Ala	Arg	Gly	Ala	Arg
			675				680					685			
Arg	Met	Ala	Ile	Leu	Gly	Asp	Thr	Ala	Trp	Asp	Phe	Gly	Ser	Val	Gly
						695					700				
Gly	Val	Leu	Asn	Ser	Leu	Gly	Lys	Met	Val	His	Gln	Ile	Phe	Gly	Ser
705					710					715					720
Ala	Tyr	Thr	Ala	Leu	Phe	Ser	Gly	Val	Ser	Trp	Ile	Met	Lys	Ile	Gly
				725					730					735	
Ile	Gly	Val	Leu	Leu	Thr	Trp	Ile	Gly	Leu	Asn	Ser	Lys	Asn	Thr	Ser
			740					745					750		
Met	Ser	Phe	Ser	Cys	Ile	Ala	Ile	Gly	Ile	Ile	Thr	Leu	Tyr	Leu	Gly
			755				760					765			
Val	Val	Val	Gln	Ala	Asp	Met	Gly	Cys	Val	Ile	Asn	Trp	Lys	Gly	Lys
						775					780				
Glu	Leu	Lys	Cys	Gly	Ser	Gly	Ile	Phe	Val	Thr	Asn	Glu	Val	His	Thr
785					790					795					800
Trp	Thr	Glu	Gln	Tyr	Lys	Phe	Gln	Ala	Asp	Ser	Pro	Lys	Arg	Val	Ala
				805					810					815	
Thr	Ala	Ile	Ala	Gly	Ala	Trp	Glu	Asn	Gly	Val	Cys	Gly	Ile	Arg	Ser
			820					825					830		
Thr	Thr	Arg	Met	Glu	Asn	Leu	Leu	Trp	Lys	Gln	Ile	Ala	Asn	Glu	Leu
			835				840					845			
Asn	Tyr	Ile	Leu	Trp	Glu	Asn	Asp	Ile	Lys	Leu	Thr	Val	Val	Val	Gly
						855					860				
Asp	Ile	Thr	Gly	Val	Leu	Glu	Gln	Gly	Lys	Arg	Thr	Leu	Thr	Pro	Gln
865					870					875					880
Pro	Met	Glu	Leu	Lys	Tyr	Ser	Trp	Lys	Thr	Trp	Gly	Leu	Ala	Lys	Ile
				885					890					895	
Val	Thr	Ala	Glu	Thr	Gln	Asn	Ser	Ser	Phe	Ile	Ile	Asp	Gly	Pro	Ser
			900					905					910		

Thr	Pro	Glu	Cys	Pro	Ser	Ala	Ser	Arg	Ala	Trp	Asn	Val	Trp	Glu	Val
		915					920					925			
Glu	Asp	Tyr	Gly	Phe	Gly	Val	Phe	Thr	Thr	Asn	Ile	Trp	Leu	Lys	Leu
	930					935					940				
Arg	Glu	Val	Tyr	Thr	Gln	Leu	Cys	Asp	His	Arg	Leu	Met	Ser	Ala	Ala
	945				950					955					960
Val	Lys	Asp	Glu	Arg	Ala	Val	His	Ala	Asp	Met	Gly	Tyr	Trp	Ile	Glu
				965					970					975	
Ser	Gln	Lys	Asn	Gly	Ser	Trp	Lys	Leu	Glu	Lys	Ala	Ser	Leu	Ile	Glu
			980					985					990		
Val	Lys	Thr	Cys	Thr	Trp	Pro	Lys	Ser	His	Thr	Leu	Trp	Ser	Asn	Gly
		995					1000						1005		
Val	Leu	Glu	Ser	Asp	Met	Ile	Ile	Pro	Lys	Ser	Leu	Ala	Gly	Pro	Ile
	1010					1015					1020				
Ser	Gln	His	Asn	His	Arg	Pro	Gly	Tyr	His	Thr	Gln	Thr	Ala	Gly	Pro
	1025				1030					1035					1040
Trp	His	Leu	Gly	Lys	Leu	Glu	Leu	Asp	Phe	Asn	Tyr	Cys	Glu	Gly	Thr
				1045					1050					1055	
Thr	Val	Val	Ile	Ser	Glu	Asn	Cys	Gly	Thr	Arg	Gly	Pro	Ser	Leu	Arg
			1060					1065					1070		
Thr	Thr	Thr	Val	Ser	Gly	Lys	Leu	Ile	His	Glu	Trp	Cys	Cys	Arg	Ser
		1075					1080					1085			
Cys	Thr	Leu	Pro	Pro	Leu	Arg	Tyr	Met	Gly	Glu	Asp	Gly	Cys	Trp	Tyr
	1090					1095					1100				
Gly	Met	Glu	Ile	Arg	Pro	Ile	Asn	Glu	Lys	Glu	Glu	Asn	Met	Val	Lys
	1105				1110					1115					1120
Ser	Leu	Ala	Ser	Ala	Gly	Ser	Gly	Lys	Val	Asp	Asn	Phe	Thr	Met	Gly
				1125					1130					1135	
Val	Leu	Cys	Leu	Ala	Ile	Leu	Phe	Glu	Glu	Val	Met	Arg	Gly	Lys	Phe
			1140					1145					1150		
Gly	Lys	Lys	His	Met	Ile	Ala	Gly	Val	Leu	Phe	Thr	Phe	Val	Leu	Leu
		1155					1160					1165			
Leu	Ser	Gly	Gln	Ile	Thr	Trp	Arg	Gly	Met	Ala	His	Thr	Leu	Ile	Met
	1170					1175					1180				
Ile	Gly	Ser	Asn	Ala	Ser	Asp	Arg	Met	Gly	Met	Gly	Val	Thr	Tyr	Leu
	1185				1190					1195					1200
Ala	Leu	Ile	Ala	Thr	Phe	Lys	Ile	Gln	Pro	Phe	Leu	Ala	Leu	Gly	Phe
				1205					1210					1215	
Phe	Leu	Arg	Lys	Leu	Thr	Ser	Arg	Glu	Asn	Leu	Leu	Leu	Gly	Val	Gly
			1220					1225					1230		
Leu	Ala	Met	Ala	Ala	Thr	Leu	Arg	Leu	Pro	Glu	Asp	Ile	Glu	Gln	Met
		1235					1240					1245			
Ala	Asn	Gly	Ile	Ala	Leu	Gly	Leu	Met	Ala	Leu	Lys	Leu	Ile	Thr	Gln
	1250					1255					1260				
Phe	Glu	Thr	Tyr	Gln	Leu	Trp	Thr	Ala	Leu	Val	Ser	Leu	Thr	Cys	Ser
	1265				1270					1275					1280
Asn	Thr	Ile	Phe	Thr	Leu	Thr	Val	Ala	Trp	Arg	Thr	Ala	Thr	Leu	Ile
				1285					1290					1295	
Leu	Ala	Gly	Ile	Ser	Leu	Leu	Pro	Val	Cys	Gln	Ser	Ser	Ser	Met	Arg
			1300					1305					1310		
Lys	Thr	Asp	Trp	Leu	Pro	Met	Thr	Val	Ala	Ala	Met	Gly	Val	Pro	Pro
		1315					1320					1325			
Leu	Pro	Leu	Phe	Ile	Phe	Ser	Leu	Lys	Asp	Thr	Leu	Lys	Arg	Arg	Ser
	1330					1335					1340				
Trp	Pro	Leu	Asn	Glu	Gly	Val	Met	Ala	Val	Gly	Leu	Val	Ser	Ile	Leu
	1345				1350					1355					1360
Ala	Ser	Ser	Leu	Leu	Arg	Asn	Asp	Val	Pro	Met	Ala	Gly	Pro	Leu	Val
				1365					1370					1375	
Ala	Gly	Gly	Leu	Leu	Ile	Ala	Cys	Tyr	Val	Ile	Thr	Gly	Thr	Ser	Ala
			1380					1385					1390		
Asp	Leu	Thr	Val	Glu	Lys	Ala	Ala	Asp	Val	Thr	Trp	Glu	Glu	Glu	Ala

1395					1400					1405					
Glu	Gln	Thr	Gly	Val	Ser	His	Asn	Leu	Met	Ile	Thr	Val	Asp	Asp	Asp
1410					1415					1420					
Gly	Thr	Met	Arg	Ile	Lys	Asp	Asp	Glu	Thr	Glu	Asn	Ile	Leu	Thr	Val
1425					1430					1435					
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1445					1450					1455					
Ile	Pro	Ala	Thr	Met	Leu	Val	Trp	His	Thr	Trp	Gln	Lys	Gln	Thr	Gln
1460					1465					1470					
Arg	Ser	Gly	Val	Leu	Trp	Asp	Val	Pro	Ser	Pro	Pro	Glu	Thr	Gln	Lys
1475					1480					1485					
Ala	Glu	Leu	Glu	Gly	Val	Tyr	Arg	Ile	Lys	Gln	Gln	Gly	Ile	Phe	
1490					1495					1500					
Gly	Lys	Thr	Gln	Val	Gly	Val	Gly	Val	Gln	Lys	Glu	Gly	Val	Phe	His
1505					1510					1515					
Thr	Met	Trp	His	Val	Thr	Arg	Gly	Ala	Val	Leu	Thr	His	Asn	Gly	Lys
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Arg	Leu	Glu	Pro	Asn	Trp	Ala	Ser	Val	Lys	Lys	Asp	Leu	Ile	Ser	Tyr
1540					1545					1550					
Gly	Gly	Gly	Trp	Arg	Leu	Ser	Ala	Gln	Trp	Gln	Lys	Gly	Glu	Glu	Val
1555					1560					1565					
Gln	Val	Ile	Ala	Val	Glu	Pro	Gly	Lys	Asn	Pro	Lys	Asn	Phe	Gln	Thr
1570					1575					1580					
Met	Pro	Gly	Ile	Phe	Gln	Thr	Thr	Thr	Gly	Glu	Ile	Gly	Ala	Ile	Ala
1585					1590					1595					
Leu	Asp	Phe	Lys	Pro	Gly	Thr	Ser	Gly	Ser	Pro	Ile	Ile	Asn	Arg	Glu
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Gly	Lys	Val	Val	Gly	Leu	Tyr	Gly	Asn	Gly	Val	Val	Thr	Lys	Asn	Gly
1620					1625					1630					
Gly	Tyr	Val	Ser	Gly	Ile	Ala	Gln	Thr	Asn	Ala	Glu	Pro	Asp	Gly	Pro
1635					1640					1645					
Thr	Pro	Glu	Leu	Glu	Glu	Glu	Met	Phe	Lys	Lys	Arg	Asn	Leu	Thr	Ile
1650					1655					1660					
Met	Asp	Leu	His	Pro	Gly	Ser	Gly	Lys	Thr	Arg	Lys	Tyr	Leu	Pro	Ala
1665					1670					1675					
Ile	Val	Arg	Glu	Ala	Ile	Lys	Arg	Arg	Leu	Arg	Thr	Leu	Ile	Leu	Ala
1685					1690					1695					
Pro	Thr	Arg	Val	Val	Ala	Ala	Glu	Met	Glu	Glu	Ala	Met	Lys	Gly	Leu
1700					1705					1710					
Pro	Ile	Arg	Tyr	Gln	Thr	Thr	Ala	Thr	Lys	Ser	Glu	His	Thr	Gly	Arg
1715					1720					1725					
Glu	Ile	Val	Asp	Leu	Met	Cys	His	Ala	Thr	Phe	Thr	Met	Arg	Leu	Leu
1730					1735					1740					
Ser	Pro	Val	Arg	Val	Pro	Asn	Tyr	Asn	Leu	Ile	Ile	Met	Asp	Glu	Ala
1745					1750					1755					
His	Phe	Thr	Asp	Pro	Ala	Ser	Ile	Ala	Ala	Arg	Gly	Tyr	Ile	Ser	Thr
1765					1770					1775					
Arg	Val	Gly	Met	Gly	Glu	Ala	Ala	Ala	Ile	Phe	Met	Thr	Ala	Thr	Pro
1780					1785					1790					
Pro	Gly	Thr	Ala	Asp	Ala	Phe	Pro	Gln	Ser	Asn	Ala	Pro	Ile	Gln	Asp
1795					1800					1805					
Glu	Glu	Arg	Asp	Ile	Pro	Glu	Arg	Ser	Trp	Asn	Ser	Gly	Asn	Glu	Trp
1810					1815					1820					
Ile	Thr	Asp	Phe	Val	Gly	Lys	Thr	Val	Trp	Phe	Val	Pro	Ser	Ile	Lys
1825					1830					1835					
Ala	Gly	Asn	Val	Ile	Ala	Asn	Cys	Leu	Arg	Lys	Asn	Gly	Lys	Lys	Val
1845					1850					1855					
Ile	Gln	Leu	Ser	Arg	Lys	Thr	Phe	Asp	Thr	Glu	Tyr	Gln	Lys	Thr	Lys
1860					1865					1870					
Leu	Asn	Asp	Trp	Asp	Phe	Val	Val	Thr	Thr	Asp	Ile	Ser	Glu	Met	Gly
1875					1880					1885					

Ala	Asn	Phe	Ile	Ala	Asp	Arg	Val	Ile	Asp	Pro	Arg	Arg	Cys	Leu	Lys	1890	1895	1900
Pro	Val	Ile	Leu	Thr	Asp	Gly	Pro	Glu	Arg	Val	Ile	Leu	Ala	Gly	Pro	1905	1910	1915
Met	Pro	Val	Thr	Val	Ala	Ser	Ala	Ala	Gln	Arg	Arg	Gly	Arg	Val	Gly	1925	1930	1935
Arg	Asn	Pro	Gln	Lys	Glu	Asn	Asp	Gln	Tyr	Ile	Phe	Met	Gly	Gln	Pro	1940	1945	1950
Leu	Asn	Lys	Asp	Glu	Asp	His	Ala	His	Trp	Thr	Glu	Ala	Lys	Met	Leu	1955	1960	1965
Leu	Asp	Asn	Ile	Asn	Thr	Pro	Glu	Gly	Ile	Ile	Pro	Ala	Leu	Phe	Glu	1970	1975	1980
Pro	Glu	Arg	Glu	Lys	Ser	Ala	Ala	Ile	Asp	Gly	Glu	Tyr	Arg	Leu	Lys	1985	1990	1995
Gly	Glu	Ser	Arg	Lys	Thr	Phe	Val	Glu	Leu	Met	Arg	Arg	Gly	Asp	Leu	2005	2010	2015
Pro	Val	Trp	Leu	Ala	His	Lys	Val	Ala	Ser	Glu	Gly	Ile	Lys	Tyr	Thr	2020	2025	2030
Asp	Arg	Lys	Trp	Cys	Phe	Asp	Gly	Glu	Arg	Asn	Asn	Gln	Ile	Leu	Glu	2035	2040	2045
Glu	Asn	Met	Asp	Val	Glu	Ile	Trp	Thr	Lys	Glu	Gly	Glu	Lys	Lys	Lys	2050	2055	2060
Leu	Arg	Pro	Arg	Trp	Leu	Asp	Ala	Arg	Thr	Tyr	Ser	Asp	Pro	Leu	Ala	2065	2070	2075
Leu	Lys	Glu	Phe	Lys	Asp	Phe	Ala	Ala	Gly	Arg	Lys	Ser	Ile	Ala	Leu	2085	2090	2095
Asp	Leu	Val	Thr	Glu	Ile	Gly	Arg	Val	Pro	Ser	His	Leu	Ala	His	Arg	2100	2105	2110
Thr	Arg	Asn	Ala	Leu	Asp	Asn	Leu	Val	Met	Leu	His	Thr	Ser	Glu	His	2115	2120	2125
Gly	Gly	Arg	Ala	Tyr	Arg	His	Ala	Val	Glu	Glu	Leu	Pro	Glu	Thr	Met	2130	2135	2140
Glu	Thr	Leu	Leu	Leu	Leu	Gly	Leu	Met	Ile	Leu	Leu	Thr	Gly	Gly	Ala	2145	2150	2155
Met	Leu	Phe	Leu	Ile	Ser	Gly	Lys	Gly	Ile	Gly	Lys	Thr	Ser	Ile	Gly	2165	2170	2175
Leu	Ile	Cys	Val	Ile	Ala	Ser	Ser	Gly	Met	Leu	Trp	Met	Ala	Asp	Val	2180	2185	2190
Pro	Leu	Gln	Trp	Ile	Ala	Ser	Ala	Ile	Val	Leu	Glu	Phe	Phe	Met	Met	2195	2200	2205
Val	Leu	Leu	Ile	Pro	Glu	Pro	Glu	Lys	Gln	Arg	Thr	Pro	Gln	Asp	Asn	2210	2215	2220
Gln	Leu	Ala	Tyr	Val	Val	Ile	Gly	Ile	Leu	Thr	Leu	Ala	Ala	Ile	Val	2225	2230	2235
Ala	Ala	Asn	Glu	Met	Gly	Leu	Leu	Glu	Thr	Thr	Lys	Arg	Asp	Leu	Gly	2245	2250	2255
Met	Ser	Lys	Glu	Pro	Gly	Val	Val	Ser	Pro	Thr	Ser	Tyr	Leu	Asp	Val	2260	2265	2270
Asp	Leu	His	Pro	Ala	Ser	Ala	Trp	Thr	Leu	Tyr	Ala	Val	Ala	Thr	Thr	2275	2280	2285
Val	Ile	Thr	Pro	Met	Leu	Arg	His	Thr	Ile	Glu	Asn	Ser	Thr	Ala	Asn	2290	2295	2300
Val	Ser	Leu	Ala	Ala	Ile	Ala	Asn	Gln	Ala	Val	Val	Leu	Met	Gly	Leu	2305	2310	2315
Asp	Lys	Gly	Trp	Pro	Ile	Ser	Lys	Met	Asp	Leu	Gly	Val	Pro	Leu	Leu	2325	2330	2335
Ala	Leu	Gly	Cys	Tyr	Ser	Gln	Val	Asn	Pro	Leu	Thr	Leu	Ile	Ala	Ala	2340	2345	2350
Val	Leu	Leu	Leu	Val	Thr	His	Tyr	Ala	Ile	Ile	Gly	Pro	Gly	Leu	Gln	2355	2360	2365
Ala	Lys	Ala	Thr	Arg	Glu	Ala	Gln	Lys	Arg	Thr	Ala	Ala	Gly	Ile	Met			

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Lys Asn Pro Thr Val	Asp Gly Ile Met Thr	Ile Asp Leu Asp Pro Val
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Ile Tyr Asp Ser	Lys Phe Glu Lys Gln Leu	Gly Gln Val Met Leu Leu
	2405	2410
Val Leu Cys	Ala Val Gln Leu Leu Leu Met	Arg Thr Ser Trp Ala Leu
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Cys Glu Val Leu Thr	Leu Ala Thr Gly Pro Ile Thr	Thr Thr Leu Trp Glu
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Gly Ser Pro Gly Lys Phe	Trp Asn Thr Thr Ile Ala Val	Ser Met Ala
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Glu Thr Leu Gly Glu Lys Trp Lys Lys Lys	Leu Asn Gln Leu Ser Arg	
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Lys Glu Phe Asp Leu Tyr Lys Lys Ser Gly	Ile Thr Glu Val Asp Arg	
	2515	2520
Thr Glu Ala Lys Glu Gly Leu Lys Arg Gly	Glu Ile Thr His His Ala	
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Val Ser Arg Gly Ser Ala Lys Leu Gln Trp	Phe Val Glu Arg Asn Met	
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Val Ile Pro Glu Gly Arg Val Ile Asp Leu	Gly Cys Gly Arg Gly Gly	
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Trp Ser Tyr Tyr Cys Ala Gly Leu Lys Lys	Val Thr Glu Val Arg Gly	
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Tyr Thr Lys Gly Gly Pro Gly His Glu Glu	Pro Val Pro Met Ser Thr	
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Tyr Gly Trp Asn Ile Val Lys Leu Met Ser	Gly Lys Asp Val Phe Tyr	
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Lys His Gly Gly Met Leu Val Arg Asn Pro	Leu Ser Arg Asn Ser Thr	
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Arg Arg Pro Thr Ile Glu Lys Asp Val Asp	Leu Gly Ala Gly Thr Arg	
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His Val Asn Ala Glu Pro Glu Thr Pro Asn	Met Asp Val Ile Gly Glu	
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Arg Ile Lys Arg Ile Lys Glu Glu His Ser	Ser Thr Trp His Tyr Asp	
	2770	2775
Asp Glu Asn Pro Tyr Lys Thr Trp Ala Tyr	His Gly Ser Tyr Glu Val	
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Asp Thr Arg Thr Pro Arg Pro Met Pro Gly	Thr Arg Lys Val Met Glu	
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		2860

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Arg	Leu	Cys	Thr	Arg	Glu	Glu	Phe	Thr	Lys	Lys	Val	Arg	Thr	Asn	Ala	2885	2890	2895	
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Gln	Pro	Ser	Lys	Gly	Trp	His	Asp	Trp	Gln	Gln	Val	Pro	Phe	Cys	Ser	3185	3190	3195	3200
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Pro	Cys	Arg	Pro	Gln	Asp	Glu	Leu	Ile	Gly	Arg	Ala	Arg	Ile	Ser	Gln	3220	3225	3230	
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Ser	Arg	Thr	Thr	Trp	Ser	Ile	His	Ala	His	His	Gln	Trp	Met	Thr	Thr	3285	3290	3295	
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Trp	Met	Glu	Asp	Lys	Thr	Pro	Val	Thr	Thr	Trp	Glu	Asp	Val	Pro	Tyr	3315	3320	3325	
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